~~B-4781~~
628.16

FRANKLIN
INSTITUTE
LIBRARY

HYATT
PURE WATER
SYSTEM

DESCRIPTIVE CIRCULAR

OF

The Hyatt Pure Water System

4.30.87

ADAPTED TO

CITIES, TOWNS, FACTORIES, SUGAR REFINERIES, BREWERIES, BOTTLING
ESTABLISHMENTS, COTTON MILLS, WOOLEN MILLS, LAUNDRIES,
HOTELS, ICE MANUFACTORIES, PAPER MILLS, PUBLIC
INSTITUTIONS, STEAM BOILERS, LOCOMOTIVES,
PRIVATE RESIDENCES, ETC., ETC.

FRANKLIN INSTITUTE LIBRARY,
PHILADELPHIA.
Cl...... Book...... Accession......
From......
REFERENCE. PAMPHLET.

H

THE NEWARK FILTERING COMPANY,
TRIBUNE BUILDING,
NEW YORK.

1887.

CONTENTS.

PAGE.
THE HYATT PURE WATER SYSTEM, 3
IMPORTANT CHARACTERISTICS, 4
AN UNLIMITED GUARANTY, 5
PATENT PROTECTION, 6
SOMERVILLE AND RARITAN, N. J., WATER WORKS--ILLUSTRATED, 7
CITY WATER SUPPLIES, 8
NO TRACE OF COAGULANT, 12
AN EPIDEMIC ARRESTED, 14
AT THE WORLD'S EXPOSITION, 15
MEDALS AWARDED—ILLUSTRATED, 15
STEAM BOILERS, 17
PAPER MAKERS, 19
TEXTILE MANUFACTURES, 21
LAUNDRIES, 24
ICE MANUFACTURERS, 26
BREWERIES AND DISTILLERIES, 27
BOTTLING ESTABLISHMENTS, 28
HOTELS, ETC., 28
SUGAR PLANTERS AND REFINERS, 29
MISCELLANEOUS, 31
TEN-FOOT FILTER—ILLUSTRATED, 33
SIX AND ONE HALF FOOT FILTER—ILLUSTRATED, 36
SPECIAL FORM FILTER—ILLUSTRATED, 39
DISCHARGE FILTER—ILLUSTRATED, 42
HOUSE FILTER—ILLUSTRATED, 44
SCHEDULE OF SIZES AND PRICES, 46
PARTIAL LIST OF USERS, 47

THE HYATT PURE WATER SYSTEM.

THE HYATT PURE WATER SYSTEM combines, in perfect conformity with Nature's laws and methods, the essential principles by which every drop of true spring or well water in the world has been purified.

It is not a mere straining apparatus, but the adaptation of natural processes, under direction of the most advanced scientific and sanitary guidance, to practical and economical uses in the perfect purification of water.

Filtration alone has long been known to be inadequate. Domestic filters are pronounced by the highest authority "more liable to be a source of danger than a shield from it"; and filtering reservoirs, however costly or extensive, cannot take from turbid water all the clay suspended in it or the discolorations that come from swamps; nor can they remove the more insidious matters in solution that afford food and conditions favorable to producing disease germs.

The Hyatt system reproduces Nature's methods, improves upon them by adaptations of sanitary + science and inventive art, and produces results identical with ~~hers.~~ Nature It is the only purifying system adapted to every condition requiring pure, clear, bright, wholesome water in any considerable quantity.

THE BEST EVIDENCE

that it is a perfect system is its perfect work. This may be seen wherever our plants are in operation, We extend an open invitation to Water Commissioners, Sanitarians, Engineers and all who are interested in pure water, to visit our plants, and examine thoroughly their construction, their principles and the work they accomplish. Such an inspection will show that all the requirements of a perfect water-purifying system are fulfilled; and:—

First—That our system uninterruptedly regenerates the water, however bad it may be, to a condition of crystalline brilliancy and purity, fairly rivalling the most famous bleachery springs, and utterly unknown heretofore to users of river or aqueduct water anywhere in the world.

Second—That it is unlimited in capacity or application.

Third—That our filters contain and utilize from ten to twenty times as much filtering material in proportion to the work accomplished as any of the imperfect contrivances claimed to be filters.

Fourth—That it is easily managed, economical and practically indestructible, lasting as long as the water mains.

IMPORTANT CHARACTERISTICS.

The Hyatt system purifies for potable purposes the few thousand gallons per day used in private residences or small industries, or the many millions of gallons required in the same time to supply the largest cities, at merely nominal expense.

It saves fuel, prevents all scale and mud deposit, loosens old scale already in boilers, renders cleaning unnecessary, prevents burning out, and lessens the perils of explosion. See elsewhere the testimonials of experienced engineers on this point.

It is thoroughly and quickly washed, and kept constantly clean and in perfect condition for work. No mechanical labor is required except opening and closing the proper valves, the action of the water doing all the rest.

The filtering material is sand and comminuted coke, which experience and research have proved to be the best for such purposes. (After years of use the beds are as clean and good as at first.)

PREPARING FOR FILTRATION.

The water in this system is prepared for filtration by a delicate process, which is an ingenious adaptation of natural methods.

One of the most common, active and efficient of the earthy salts used by Nature in purifying water is alumina. It is not unfrequently used as a water purifier by many people in sections of the country where the water is clayey. The merest trace is sufficient, and this is supplied with the utmost accuracy and nicety by our process. Its action, briefly stated, is this: It changes into tangible form the impurities in solution, and gathers together these and the exceedingly fine particles of clay, so that they are filtered out. It is important to understand that the *coagulant is entangled and removed with the impurities; not a trace of it remains in the water.* This fact is known and attested by chemists and sanitarians the world over. (See page 12.)

1 DROP IN 100,000.

At the Water Works in Somerville and Raritan, N. J., supplying hundreds of thousands of gallons per day, an average of six-tenths of a grain is used per gallon, and the water is always pure, sweet and clear in the mains, no matter how muddy it is in the source of supply.

How very minute this trace is can be shown by a few figures. A drop of water weighs a grain, and there are 7,000 drops in a pound, 56,000 in a gallon. Six-tenths of a grain per gallon is only about 1 drop in 100,000, and is an inconceivable proportion.

NO LONGER PRESENT.

The moment it is diffused through the water it completely disintegrates, and its elements unite with others, always found in water, forming new and more permanent attachments. Thus its own form and the forms of all the impurities with which its separated elements come in contact are changed. They instantly flock together, a hundred or a thousand particles into one, and then, *as the water passes through the filter, they are removed altogether.*

HARD WATER SOFTENED.

Hard water is made soft by a combination of the Clarke process with our system. The invention consists in adding to the hard water a small quantity of lime water, or milk of lime. This changes the bi-carbonate of lime in solution, to the carbonate of lime, which is precipitated and immediately filtered out. Water containing sulphate of lime requires different treatment.

EXPENSE AND CAPACITIES.

An addition of 2 to 5 per cent. to the annual water rates in any city will cover the entire cost of maintaining one of our plants, including interest on investment, and insure bright, wholesome water the year round. Its expense, therefore, bears no adequate proportion to the wonderfully perfect results.

For private residences, laundries, hotels, mills, breweries, railroad pumping stations, public institutions, etc., we make different sizes and special forms of Filters, ranging in capacity from 6,000 to 325,000 gallons per day. Larger sizes, up to 30 feet in diameter, two or three millions gallons daily capacity, made to order.

VALUABLE FEATURES.

The coagulant used is the cheapest and most effective known, and is entirely removed by filtration. The highest authorities agree that sulphate of alumina, on account of its cheapness and efficiency, is the most practical of all known coagulants.

The aerating system, applied to large plants, is economical and perfect in its operations, acts by gravity, entails no loss of head or of power, and combines twenty-five per cent. or more of atmospheric air with the water under static pressure, oxidizing the impurities, destroying the conditions of germ propagation, and so regenerating the water that it will keep sweet much longer in pipes or reservoirs than water not so treated.

Professor Austen, of Rutgers College, found that after the pressure is removed the oxygen retained in the water aerated by this system continues to operate beneficially for a month.

AN UNLIMITED GUARANTY.

With a thousand or more plants and filters distributed throughout the United States and Canada—having capacities from a few thousands to many millions of gallons daily—treating all kinds of water, we have never failed to give perfect satisfaction, rendering the muddiest water clear and wholesome, and hard water soft and delicious to use.

We ask no cities or persons to take any risks.

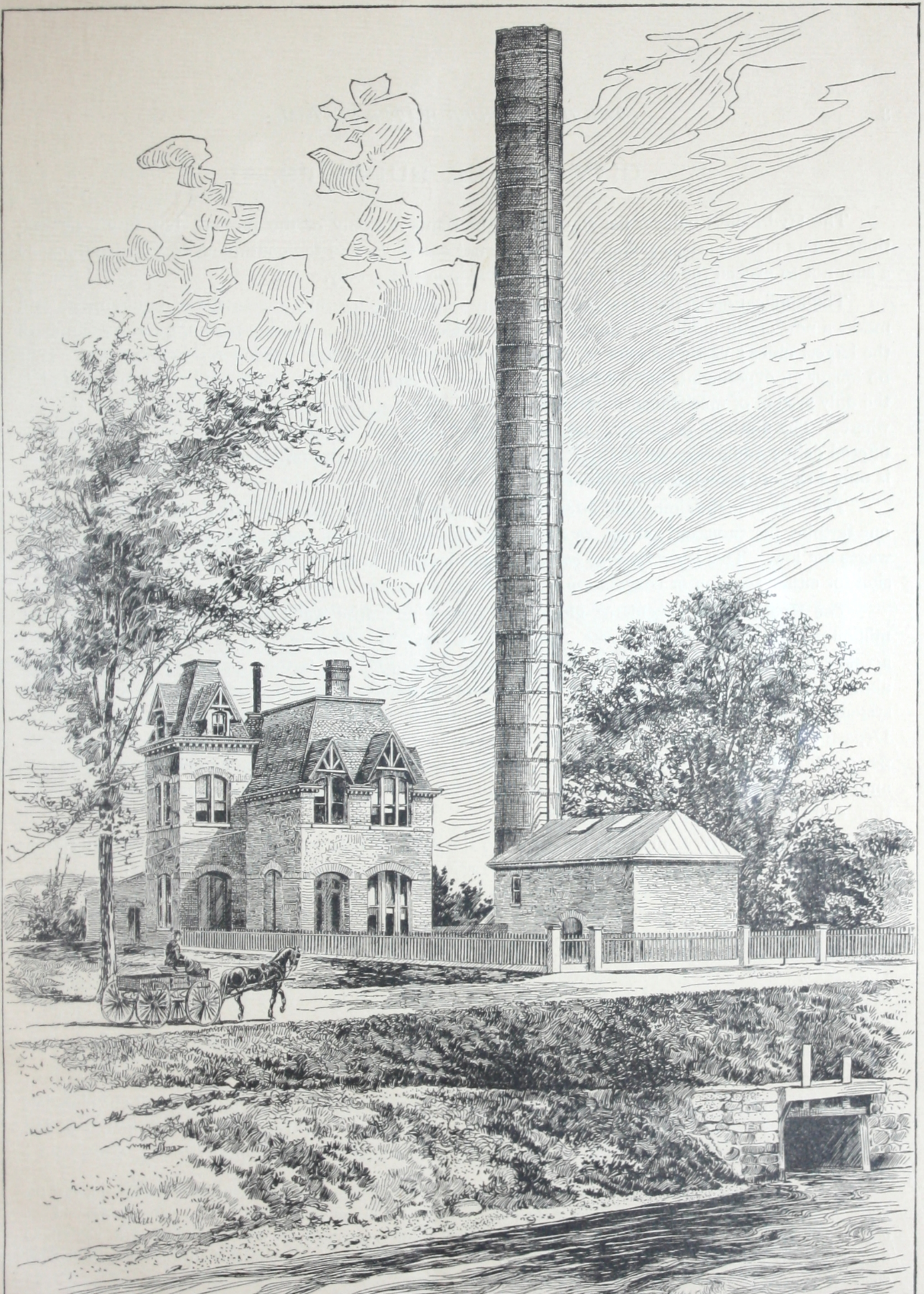
We guarantee promised results.

PATENT PROTECTION.

The Hyatt Filters and System are protected by the following Letters Patent, and any infringement will be prosecuted as provided by law:—

No. 229,744, dated July 6, 1880; Nos. 243,212 and 243,265, dated June 21, 1881; No. 248,468, dated October 18, 1881; No. 272,442, dated February 20, 1883; Nos. 273,539, 273,540, 273,541, 273,542 and 273,543, dated March 6, 1883; Nos. 283,489 and 283,490, dated August 21, 1883; Nos. 293,740, 293,741, 293,742, 293,743, 293,744, 293,745, 293,746, 293,747, 293,748, 293,749, 293,750, 293,882 and 293,883, dated February 19, 1884; Nos. 322,102, 322,103 and 322,104, dated July 14, 1885; No. 326,221, dated September 15, 1885; No. 338,414, dated March 23, 1886.

The aerating and filtering of water under pressure, by a continuous process, also the coagulating and filtering of water by a continuous process, with the various mechanical means by which these results are accomplished, are broadly covered by the above.



SOMERVILLE, N. J., WATER WORKS, (See Page 9.)
The First City Plant Erected.

CITY WATER SUPPLIES.

The Hydraulic Engineer has to consider the wants not only of the present, but future generations. The plant must be permanent, its cost not excessive, and the continuous cost of maintenance a sum not to exceed the interest on a reasonable investment only.

The application of the Hyatt system to city water supplies fully meets these requirements and marks a new era in public sanitation. It is the effective means of treating the entire water supply of the largest cities; vastly superior to, and more economical than any filtering reservoir system. It is no longer an experiment, but is in actual operation or construction in many cities and towns, and is the only system of mechanical filtration for public water supplies in use in the United States or elsewhere. The first cost of filtering reservoirs (see Croes and Howell) is $30,000 per million gallons filtered daily; while the cost of the Hyatt system, complete, under ordinary problems of engineering, is only $15,000, including connections, etc.

The cost of maintaining and attending a filtering reservoir, according to good authority, is, say, one farthing per thousand gallons, or $5.00 per million gallons of water filtered, in a country where wages are low. This is *for filtering only*, does not include interest on first cost, and makes no provision for either aeration or coagulation.

The Hyatt system coagulates, filters and aerates an entire water supply at $2.00 to $2.50 per million gallons, exclusive of interest. Over half of this cost of maintenance is for coagulant; so the actual cost of *filtration alone*, by the Hyatt system, is *one-fifth* of a farthing per one thousand gallons, about one-fifth the amount expended for filtration at Leeds, England, where the filtering reservoir system is as nearly perfected as can be. If we allow 160 gallons of water daily per capita (the War Department estimate for Washington, D. C.) filtration by the reservoir system costs twenty-nine cents per capita per annum. Treatment by the Hyatt System costs eight or nine cents per capita per annum. And the water is not simply strained, but freed from impurities by coagulation and filtration, and surcharged with oxygen by aeration.

Capt. Thomas W. Symons, in his report to the War Department in response to Senate resolution of Feb. 8th, 1886, relative to filters for the water supply of Washington, D. C., says:

> The plan selected, to my mind, possesses the greatest advantage, the greatest adaptability to our particular case; has been endorsed by very high authority, and its practical working has been on a scale sufficiently large to prove its capability of meeting all requirements. * * * The filter I have selected as most desirable is one made by the Newark Filtering Co. * * * I am convinced that the health and good name of the city require an efficient system whereby its water supply can be guarded against epidemics which may prevail in the villages of the upper Potomac, and be rendered thoroughly wholesome and satisfactory, which is not the case now.
>
> The cost of accomplishing this by the plan proposed (the Hyatt system) seems very reasonable, and is *far less than that at which any other city has ever had a water supply of the same magnitude properly filtered by artificial means.*

The Health Board of Newark, N. J., examined the Hyatt system, employing eminent chemists to analyze the water before and after treatment. On June 7th, 1886, the Board met, and Dr. Mandeville offered the following, in substance, which was unanimously adopted:

> *Whereas*, It appears by the analysis of Professors Austen and Wilber, analysts and chemists of this Board, that the Hyatt system of filtration and aeration removes from the Passaic water all suspended matter and a large portion of the organic impurities, and renders the water clear and sparkling to the eye, potable and refreshing to the taste, and safe to drink; that the process is practical in every detail; and the requisite plant and fixtures of a permanent and durable character.
>
> *Resolved*, That the Board of Health do recommend its adoption by the Aqueduct Board of the City of Newark, as a ready means of affording a greatly improved and safe supply of water to our citizens.

Dr. Oscar C. DeWolf, the Commissioner of Health of Chicago, Ill., gives the following. It refers to filtering water from the Chicago River, a sluggish current of filth, impurity and pollution, the receptacle of surface drainage and sewage, and wholly unfit for use:

CITY OF CHICAGO, DEPARTMENT OF HEALTH,
CHICAGO, May 28th, 1886.

I have examined the Hyatt system of filtering water in use at the Phœnix Distillery, corner of Clybourne Place and the north branch of the Chicago River.

The filter delivers from 290 to 350 gallons per minute, drawn from the Chicago River at this point. The treatment of the water is by a double process—chemical precipitation and mechanical filtration. As delivered from the filter it is perfectly clear water, without odor or taste. On March the 5th I received three glass jars filled with water from this filter, and which have stood on my desk to this date (85 days).

The water still retains the same character—perfectly clear and free from odor or taste. The gang of boilers receiving water from this filter are free from deposits or scales of every kind, and the old boilers, which were heavily incrusted from the use of the water previous to placing the filter, are fast becoming clean since using the present water.

On Saturday, the 15th inst., a bushel of scales which had been loosened was blown out from one of these old boilers.

By chemical analysis the following facts are exhibited: The filtered water contains in 1,000,000 parts—Free Ammonia .110 parts, Albuminoid Ammonia .090 parts. The oxygen consumed in oxidation amounts to 1.6 parts per 1,000,000. The residue left on evaporation blackens but little on heating.

The large amount of Free Ammonia comes from the coagulant used for precipitation, and is perfectly harmless. The Albuminoid Ammonia is about the same as found in our lake water. The water, however, is rendered softer than the lake water. The arrangement for cleansing the filter of separated matter, coagulated impurities, etc., is rapid and efficient, and the water delivered by your system to the Phœnix Distillery is certainly suitable for all manufacturing purposes.

OSCAR C. DEWOLF, M. D.,
Commissioner of Health.

Dr. Charles W. Dabney, Jr., State Chemist of North Carolina, writing on the proposed filtration of the Raleigh, N. C., water supply, says:

"If I may judge by the success of this process, which I had the opportunity of examining at the New Orleans Exposition, these filters are a triumph of modern invention. The Hyatt Filters worked on that abominable Mississippi River water and took from eight to ten tons of filth out of the average supply of a million and a half gallons each day." He suggests a plan including the whole Hyatt system, with some local adaptations, and concludes: "If this is done, as I believe it can be, Raleigh would be sure of a pure water."

Boards of Health, Aqueduct Boards, Hydraulic Engineers, Sanitarians, etc., of other cities have examined our system, reported favorably, and advised its adoption. Their recommendations will be carried out as soon as the necessary provisions are made.

The city of Somerville and town of Raritan, N. J., are supplied by our system. The plant has a capacity of 500,000 gallons per day. The water in the river is at times as muddy as the Mississippi. Before our system was adopted the water supply was so unsatisfactory that many of the citizens declined to take it into their houses. Now new taps, pipes and mains are being put in continually, nearly five miles having been laid within the past year.

The President of the Water Company says:

Newark Filtering Company. RARITAN, N. J., March 26th, 1886.

GENTLEMEN—We take great pleasure in testifying to the unqualified success of the Hyatt Filtering system as applied to our Water Works. It requires but little attention; is almost automatic and does its work perfectly. Our supply is taken from the Raritan River, which is often very muddy—so often, indeed, that before the Hyatt Filters were adopted the citizens were far from unanimous in wanting the city water in their houses. We can now supply an abundance of perfectly clear water all the year round, and the demand for new mains and taps has been greatly increased. Consumers are highly pleased with the marked improvement in the water, and we consider the investment a capital one. In response to your inquiry about the use of alum, we would say that the quantity we use does not average more than six-tenths of a grain per gallon, and the finely adjusted apparatus feeds the minute quantity required. We have never met any who thought they could detect a trace of the alum remaining after filtration. They could not, in the very nature of the case, because no alum remains in the water; and so very minute is the quantity used that it is certain that no taste or other property would be imparted to the water even if it were not filtered out. We used to have many complaints about the quality of our water supply, but we have no more of them since the Hyatt system has been in operation here. We heartily recommend it to any city or water company wanting a filtering system that may be relied upon.

SOMERVILLE WATER COMPANY.

The well-known Rev. Charles H. Pool writes:

Newark Filtering Company. RARITAN, N. J., November 7th, 1885.

GENTLEMEN—When the Raritan River is muddy it is very muddy. Before the Hyatt Filters were put in very muddy water came into our houses after every considerable rain, and often after a local shower. It was at such time unfit for any kind of use. Now we have no trouble. The water is constantly clear. The numerous and heavy storms of this Autumn have given the filters a severe test, and the water has been distributed to us in a constantly and perfectly clear state. We are delighted with the pure water we now get.

CHARLES H. POOL.

Hon. John Ringelmann, ex-Member of Assembly from Somerville, writes:

Newark Filtering Company. SOMERVILLE, February 22d, 1886.

GENTLEMEN—Upon inquiring of our citizens who use the water of the Somerville and Raritan Water Company, they say the improvement is great and the water is perfect since the new filters were put in operation last year. It is always clear no matter how the weather is.

Yours very respectfully, JOHN RINGELMANN.

The city of Atlanta, Ga., has adopted the Hyatt Pure Water System, to treat 3,000,000 gallons of water daily. The Atlanta *Capitol*, of Nov. 16th, 1886, says:

"It is a source of gratulation that the muddy water of the water works is a thing of the past, or soon will be. It will be filtered and made bright and sparkling. Pure clear water is what Atlanta will now have."

The annual report of the Board of Water Commissioners says:

"With the successful operation of the filters all grumbling will stop, and Atlanta will have better water than any city that has not a Hyatt Filter."

The City Water Company, of Belleville, Ill., recently adopted the Hyatt system on the recommendation of Col. S. H. Lockett, their Hydraulic Engineer. The plant includes coagulators, filters and aerator, guaranteed to give perfectly clear water the whole year round. After a thorough trial the results were set forth as follows, in the local press:

Yesterday afternoon the Mayor and City Council of Belleville, representatives of the press, and a number of invited guests, were taken to the water works to witness the testing of the two new Hyatt Filters, which have recently been erected by the company. The test was in every way satisfactory, and the water, which had formerly a fishy smell, after it passed through the process of aeration and filtration, was as clear as crystal, and gave general satisfaction to the gentlemen present, who tested its qualities. In case of fire the water will be turned directly into the pipes without filtering, and the pipes flushed out again after the fire. The capacity of the filters is 300,000 gallons daily, while the daily consumption of the city is about 275,000. Other filters will shortly be ordered and the improvements which the company will make this year to their works will be in the neighborhood of $30,000.—*St. Louis (Mo.) Republican, October 13th,* 1886.

The additional filters have since been ordered.

For the past two months the Water Works Company has been engaged in the construction of two filters, to be used n purifying the water which is furnished to its customers. The work is now completed, and it can be truthfully said, that no purer or better water is to be found than is now supplied by the Water Works Company. It is as clear as crystal, and is as pure as the water from a mountain stream.

Belleville has reason to be proud of having a water which for excellency is unexcelled.—*Belleville (Ill.), Daily News-Democrat, October 13th,* 1886.

At Bucyrus, Ohio, the Water Works Co., after trying all means, failed to obtain a satisfactory water supply until they adopted the Hyatt system. We quote from the local papers:

"The great trouble has been the enormous difficulty of supplying any water better than the river water; they have spared neither trouble nor money; they have sunk wells by the score and spent dollars by the thousand, but all to no purpose, they have failed to furnish 'an ample and sufficient supply of pure water for the private use of the citizens.'

"As a last expedient they have added to their establishment two large filters on the Hyatt Pure Water System. * * Now all can get pure water for domestic purposes."—*Bucyrus Journal,* March 4, 1887.

"The Hyatt Pure Water System is in operation at the water works, and those who have seen the effect of the filters on our murky river water are fully satisfied *it fulfils, if not exceeds, the claims made for the system.* At one end, the impure river water, impregnated with organic matter and yellow with fine clay, passes into the filter, and at the other it passes out bright, clean and sparkling. The sudden change in color, taste and purity is almost remarkable, and one is nearly led to believe that a magician's wand has performed the feat rather than a scientific and practical treatment. The water as it comes from the filter is sparkling, cool and sweet to the taste, and the most sensitive tongue cannot detect the slightest trace of chemical or mechanical treatment. That the system is a complete success is an established fact, not only demonstrated in other places, but in Bucyrus."—*Bucyrus Critic,* March 3d, 1887.

The Charleston, W. Va., Water Works Company have a new plant of the Hyatt system in successful operation, purifying all the water used in that city, and write as follows:

Office of the Charleston Water Works Co.,
Charleston, Kanawha Co., W. Va., Nov. 13th, 1886.

The Newark Filtering Company.

Gentlemen:—Command us for any certificate of efficiency, or good word you may desire, for your system, and we will gladly furnish it.

Yours respectfully,
CHARLESTON WATER WORKS CO.,
R. B. C. Bement, *Treasurer.*

Rich Hill, Mo., has also obtained good water by adopting this system:

Rich Hill Water Works Co.,
Rich Hill, Mo., Nov. 19th, 1886.

The Newark Filtering Company.

Gentlemen:—We take pleasure in saying that before the adoption of your filter we were unable to generally introduce the Marias des Cygnes river water into the residences and manufactories of Rich Hill, but since its operation we have largely increased our list of consumers and the water we are furnishing is giving entire satisfaction, being bright and clear and free from all impurities.

Yours truly, (Signed), W. O. GARRISON, *Secretary.*

Beatrice, Neb., had a supply of remarkably bad water, and filtration was resorted to as an absolute necessity. The *Daily Express* of that city says:

"So much was claimed for it (the purifying process) that it was but natural that it should be regarded as a valuable acquisition to the water works; *nor can we say that these promises have not been fulfilled.* * * In every case has it really surprised all visitors. It is scarcely short of marvelous how perfectly this apparatus does its work. A glass of water drawn from the filter was as clear as crystal, bright and sparkling, and to the taste was perfectly pleasant. A glass of unfiltered and one of filtered water being placed together, the difference was as noticeable as between light and darkness."

The city of Eau Claire, Wis., has adopted this system with a plant of 1,000,000 gallons daily capacity, and the cities of Raleigh, N. C., Chillicothe, Mo., Nebraska City, Neb., Huntington, W. Va., and Wichita, Kansas, have plants in course of construction.

"As the water supply of cities costs about $125 per million gallons, and as the cost of operating such plants as referred to above (the Hyatt system) is about three dollars per million gallons, it will be seen that the increased cost of purifying water by this apparatus is but little over two per cent." [From a paper read before the American Society of Mechanical Engineers and reported with illustrations in the *Sanitary Engineer*, New York.]

"The expense of the aerating apparatus is simply that of construction, there being no subsequent outlay required to keep it in operation, and the Filtering Company guarantees results."—*Engineering News.*

NO TRACE OF COAGULANT.

It has already been stated that no trace of the coagulant used to purify the water remains in it after filtration. In further confirmation of this we present the following from the eminent Professor Chandler and others:

NEW YORK, January 25th, 1887.

To the Water Commissioners of the City of Newburgh:

In accordance with your request for an opinion upon the proposed system of filtration and purification of the water supply of Newburgh, which is now under consideration by your Board, I have the honor to report that I have carefully considered the proposition in all its details and that I have made such investigations as seemed necessary. First, as to the efficiency of the proposed apparatus and process. Secondly, as to the healthfulness of the process and the materials to be employed.

I have carefully read all the documents which you placed in my hands in which the details of the apparatus and its mode of operation are given; a variety of reports as to the success of the process in other localities, and the report of Captain Thomas W. Symons made to the War Department and transmitted to the United States Senate in response to a special resolution in which a similar project for the purification of the water of the City of Washington was fully discussed. Everything contained in these various documents is entirely satisfactory, and I think I should have felt warranted in expressing an opinion favorable to the plans proposed for the City of Newburgh without investigating the matter further. Finding, however, that the process was in full operation in New Jersey, on the Raritan River, I made a visit to the Water Works of Somerville, from which this town as well as the Town of Raritan is supplied. I made a careful inspection of the apparatus at this point, saw it in full operation, and also the four filters emptied and cleaned. The apparatus is very compact, the washing of the filtering material is almost automatic; it is accomplished in a few minutes, and appears to be perfect in its operation and efficiency. The quantity of alum being used at the time I was there, was twenty-five pounds per day; on 400,000 gallons of water this would be 175,000 grains of alum, or about one-third of a grain per gallon.

At the time of my visit the water of the Raritan River was not heavily charged with mud, but it contained a sufficient quantity of very fine material to give it a milky opalescence. This is a condition which imposes the most severe attacks on a filtering system, but I found that the water as it came from the filters was as clear as crystal. I took samples of the river water, the same after the alum had been added, and again after filtration, and carefully examined them to verify the statements made to me by the man in charge. I found that there was without doubt an addition of alum to the water before it went to the filters, and I should judge in about the proportions mentioned by the attendant. I found that the filtered water *did not contain a trace of alum*, it having been *entirely removed by the filter*. I then experimented myself upon the Raritan water to see if the addition of so small a quantity of alum would actually effect at once the coagulations claimed, and I found that it did do; that my investigation of the samples *completely confirmed* the claims of the Filtering Company, and the statements of the man in charge of the apparatus at Somerville.

It then occurred to me that it would be desirable to ascertain if the water of the City of Newburgh would behave in the same way when submitted to the action of the coagulants which it is proposed to use, so I visited your city, as you are aware, and took a sample of water from Washington Lake and also a sample from the city hydrant. These I have carefully tested in connection with the proposed process, and I find that on adding alum to the Newburgh water there is an immediate coagulation and that the flocculent precipitate is one that can be *readily removed by filtration*. The examinations which I made of the Raritan water, as well as of the Newburgh water, satisfy me that a process which is successful at Raritan cannot fail to be successful at Newburgh.

In conclusion, I would say that in my opinion the plan which you now have under discussion is simple, efficient and economical, and that *no objection whatever* can be found to it on sanitary grounds; in fact it seems to me to be the only feasible plan which you can adopt, as the only alternative would be a system of filter beds, which are *much more expensive* to construct and *much more expensive* to maintain and *not as satisfactory* in the end.

Respectfully yours,
C. F. CHANDLER, M. D., PH.D.,
Chemist and Assayer.

The Newark Filtering Company. CHICAGO, Ill., May 4th, 1886.

GENTLEMEN—The Hyatt Filter at my house, attached to the Lake water service pipe, supplying all the water I use, has been in operation about six weeks. Naturally, I have watched it closely, day by day, with this result, viz.: I takes out all impurities, leaving the water sparkling and clear. It is a pleasure simply to look at it, to say nothing of the satisfaction felt in knowing that you drink water and give it to your family free from sewage and other impurities. I recently took occasion to send a sample of the water filtered to Prof. E. B. Stuart, Chemist, etc., of this city, and it affords me pleasure to state that the said chemist reported that no traces of the coagulant alum used in the filtration could be found in the said filtered water. I can heartily endorse your filter.

GEORGE T. BURROUGHS,
Vice-President Phœnix Distilling Co.

"If the process is properly carried out, *the aluminum salt is all removed in the filtering*, and a remarkably pure water is obtained."—*Report of Professors Austen and Wilber to Newark Health Board.*

"We use alum as coagulant, and after repeated analyses find no trace whatever in the water, hence infer that it must unite with the impuritities and be carried off in the waste water."

Yours respectfully,
CHARLES E. SPENCER, *Superintendent,*
Norfolk and New Brunswick (N. J.) Hosiery Co.

"No alum remains in the water."—*Somerville (N. J.) Water Co.*

"No trace of the coagulant can be found in the filtered water."—*Bucyrus* (O.) *Journal*, March 4th, 1887.

AN EPIDEMIC ARRESTED.

Probably the most marked beneficial results of using our filters was experienced in the Asylum for the Insane at Kingston, Ontario. In the spring of 1884, Dr. W. T. O'Reilly, Government inspector of Asylums, Prisons, etc., in the department of Ontario, Canada, reported seven cases of typhoid fever in the Insane Asylum at Kingston. The number of cases was doubled in a very short time, and a very serious and fatal epidemic threatened the inmates of the institution. The officials in charge reported that they were "entirely convinced that the fever is due to the impurities in the water used."

One of our 6½ foot filters, with a capacity of 150,000 gallons per day, was put in the asylum while the fever was in progress, and a marked improvement at once began. Within two weeks' time Dr. Metcalf, the Medical Superintendent, stated to a visitor that all the cases were well but two, and these were rapidly improving, and the only change about the building was having the water filtered. At that time the doctor did not feel like saying that the disappearance of the disease was owing to that, as he feared it might break out again, but certainly the change for the better began on the introduction of the filtered water, and he thought that was the cause, as there was a marked difference between the filtered and the unfiltered. But the epidemic did not break out again, and subsequently both Inspector O'Reilly and Dr. Metcalf sent the following letters, over their official signatures:

Office of Inspector of Asylums, etc., Ontario,
Toronto, January 16th, 1885.

Newark Filtering Company.

Gentlemen—In reply to your letter of the 13th inst., I have much pleasure in saying that, should you desire to do so, you are at liberty to refer to the fact that you furnished this department with a filter for the Kingston Asylum, and that that filter is in every respect satisfactory. It does exactly the work which it was required to do, and which you guaranteed it should do; and any testimony which I can offer in favor of your filter will always be cheerfully given. I have the honor to be, sir, your obedient servant,

W. T. O'REILLY, *Inspector.*

Asylum for the Insane,
Kingston, Ont., January 16th, 1885.

Newark Filtering Company.

Gentlemen—In reply to yours of the 13th inst., I beg to say that the Hyatt Filter your company put in for us last spring continues to work satisfactorily, and I have had no reason to change my favorable opinion of it. You are at liberty to make use of us as a reference. I have already answered several communications regarding the working of the filter, one from your own city; and as the filter does good work, my replies have always been favorable to it.

Yours truly,
W. G. METCALF, M. D.,
Medical Supt.

Our latest advices from the asylum show that there has never been any recurrence of the disease.

The filter below referred to has a capacity of 150,000 gallons daily, with the water supplied to this institution:

The Illinois Central Hospital for the Insane,
Jacksonville, Ill., December 12th, 1885.

Newark Filtering Company.

Gentlemen—The 6½-foot filter you put in for us has been in use about three months, and gives us great satisfaction, and is as near perfect for the purpose as anything I ever expect to see. We take our dark, turbid water, and it comes out from your filter as clear and bright as the water from the new crystal spring. What more could we ask or even wish? The facility for cleaning the filter bed is, perhaps, the most novel and valuable part of the invention, enabling us to wash the sand perfectly without any waste of material. It costs us about thirty-one cents a week for alum for the coagulator, and about thirty minutes of a man's time to wash the filtering material. Every city and every manufacturer and every housekeeper in this western country ought to have one. I cordially endorse and recommend it as the best and cheapest means of purifying water that has yet come to my notice.

Yours very truly, H. F. CARRIEL,
Superintendent.

The constant purity of the water established the value of the system as an additional sanitary measure, and Dr. Carriel has given a second order for another filter, more than doubling the size of the plant and giving a capacity of 350,000 gallons of pure clear water daily.

Mr. Fred. H. Wines, Secretary of the Board of Public Charities of the State of Illinois, writes:

The Newark Filtering Company. SPRINGFIELD, Nov. 2d, 1886.

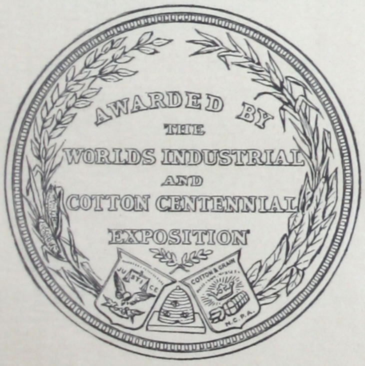
GENTLEMEN—I have no objections to the use of my name as reference for your filter.

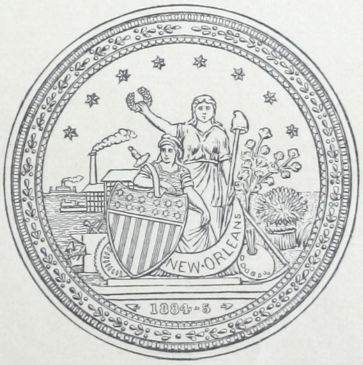
Very truly yours, FRED. H. WINES.

The State Reformatory, at Elmira, N. Y., has a plant of 325,000 gallons daily capacity, purifying all the water used in the institution, for both potable and mechanical purposes, and the water supplied to the House of Refuge, Philadelphia, and many other public institutions is purified by our system.

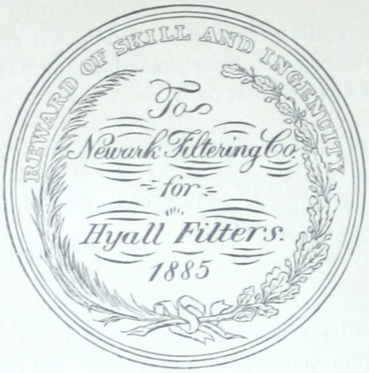
AT THE WORLD'S EXPOSITION.

During the World's Exposition at New Orleans, the muddy water of the Mississippi River was pumped up and filtered at the *rate of* 1,500,000 *gallons per day*, and the water, wholly unfit for use before purification, came from the filter as clear as crystal, bright as spring water, and as soft as rain. The total amount of solid matter removed daily can easily be computed. There is in this river water one part of dry solid sediment to from three hundred to seven hundred parts of water, averaging, say, one to five hundred. The total weight of the water filtered per day was about 11,250,000 pounds, which divided by five hundred gives 22,500 pounds of solid sediment—over ten tons. In



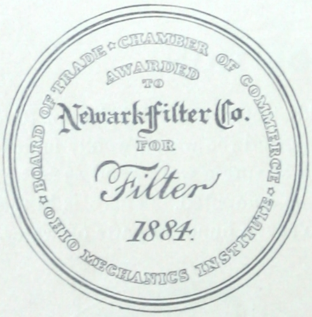


other words, every day's supply of water had ten truck loads of sediment and impurity taken out of it. The large gold medal and beautiful certificate now in the company's office award the "First Degree of Merit to the Hyatt Filters and Processes."



FRANKLIN INSTITUTE OF THE STATE OF PENNSYLVANIA
1824

In addition to this, the Hyatt system was awarded medals and first degrees of merit at the Franklin Institute, Philadelphia, Pa., and the Industrial Exhibition at Cincinnati, Ohio.


BOARD OF TRADE · CHAMBER OF COMMERCE · OHIO MECHANICS INSTITUTE
AWARDED
TO
Newark Filter Co.
FOR
Filter
1884

FRANKLIN INSTITUTE LIBRARY

STEAM BOILERS.

In no department of industry is the percentage of waste greater, and the loss more constant, than in generating steam from hard, muddy or otherwise impure water. About four-fifths of the globe yield hard water, and every drop of it evaporated into steam leaves its proportion of scale in the boiler.

Dr. G. D. Rogers, an eminent authority, is quoted as stating that one-sixteenth of an inch of scale in a boiler will require the extra consumption of 15% more fuel; ¼ of an inch 60%, and ½ an inch 150%. The U. S. Railway Master Mechanics' Association estimates that the loss of fuel, extra repairs, etc., due to incrustation amount to an average of $750 per annum for every locomotive in the Middle and Western States, and it must be nearly the same for the same power in stationary boilers. The total annual production of coal in the world at the present date is estimated at 300,000,000 tons. About half of this is consumed in generating steam. At $2.50 per ton, a low valuation, the sum thus annually expended is $375,000,000. Ten per cent. wasted by scale and mud deposits from hard and muddy water, is an annual loss of $37,500,000 in the single item of coal. The extra expense and labor of cleaning, blistering sheets, burning out, cost of repairs, etc., would probably double these figures.

The Hyatt system has met with unprecedented success in removing the substances that form scale and deposits. In some localities water is so loaded with impurities that boilers must be cleaned every week or two. Using the same water filtered by our system they run through the entire season without a sign of incrustation or deposit, giving better results than ever before attained. Beyond all question the filters soon pay for themselves in saving time, labor, fuel and repairs. Once adopted they are regarded as essential and cannot be dispensed with.

Other testimonials, under appropriate heads, such as that of Health Commissioner De Wolf, of Chicago; Duncan F. Kenner and ex-Gov. Warmoth, of New Orleans, testify to the remarkable results of using our filters to purify the Chicago, Mississippi, Ohio and other river waters for steam boiler uses, but we select a few others for this special department.

Calumet and Hecla Mine,
Newark Filtering Company. Lake Linden, Mich., February 4, 1887.

Gentlemen—This is the most wonderful thing in the way of filtering I ever saw or heard of. It would be better to pay five times the cost than to put the lake water directly into the boiler.

F. G. COGGIN, M. E.,
Superintendent of Mills.

The Newark Filtering Company. New Orleans, La., February 4th, 1886.

Gentlemen—In response to your request I beg to say that the Hyatt Filter has been in use in the Exchange for some months past, filtering Mississippi River water for the boilers connected with our elevator, machinery and steam heating system, and that up to the present it has given entire satisfaction. The boilers have been in use continually since last September without the necessity of blowing out or cleaning them.

Very truly yours, JOHN G. HAZARD,
Chairman of the Committee on Buildings, New Orleans Cotton Exchange.

The Superintendent of the Embossing Company writes in answer to a letter of inquiry:

Albany, N. Y., December 18th, 1884.

Dear Sirs—In reply to yours of yesterday, I would state we have used the Newark Filter for over two years to cleanse our boiler supply. We have a 24-inch size, and pump through it to the boilers upon which we carry eighty pounds pressure. We find we have no trouble with dirty boilers; the old scale has dropped off; less difficulty in keeping up steam, and no expense attached to it, as the engineer keeps it clean. We consider it indispensable, as we were formerly put to considerable expense from leaky flues, caused by dirt and scale on the heads, but have not had a flue calked since using the filter.

OFFICE OF ALBANY ANILINE AND CHEMICAL WORKS,
ALBANY, N. Y., September 19th, 1885.

The Newark Filtering Company.

DEAR SIRS—Yours of the 9th came to hand. The boilers were opened last Sunday, after running ten days with water from our wells, which you know, from the sample sent some months ago, contains a large amount of solid matter. The boilers were in same condition as when opened last—that is, free from scale or accumulation of sediment. We began using the Filter June 24th, and have not cleaned the boiler since, although using our city water until recently. Before using the Filter we cleaned the boiler every two weeks.

Very truly yours,
F. V. M. HUDSON.

The Western Steel Co., St. Louis, Mo., first erected for trial a 6½-foot filter, capacity 150,000 gallons per day. Within six months they ordered additional filters, and now have a plant with nearly a million gallons daily capacity.

The Newark Filtering Company.
ST. LOUIS, Nov. 9, 1886.

GENTLEMEN—The filters are doing good work, and we take pleasure in stating that they are a great benefit to us in various ways.

Yours truly,
WESTERN STEEL CO.,
Per A. W. WILCOX, *President.*

In reply to a letter of inquiry, Mr. C. T. Stewart, Secretary of the Company, writes:

GENTLEMEN—We use our water direct from the Mississippi River and have in operation three of the Hyatt Filters, which supply 800,000 gallons of bright, clear water per day. The filters remove all matter in suspension, and the cost of filtration is less than ½-cent per thousand gallons, and the present system is saving us a great many tons of coal per day. We take pleasure in recommending them to all who need a perfect filter.

C. T. STEWART, *Secretary*,
WESTERN STEEL CO.

The following is from a Boiler Inspector:

The Newark Filtering Company.
CINCINNATI, OHIO, Dec. 30th, 1886.

GENTLEMEN—In regard to the Hyatt Filter I will say it is in use in many of our boilers that I inspect quarterly through Ohio and Indiana; and in every case I find it giving entire satisfaction by removing the old scale in the boiler and preventing new scale from forming. It removes all foreign matter, the muddy water of the Ohio entering the boiler soft and clear as crystal. Where hard well water is used it cannot be surpassed, and I heartily recommend it to steam users, feeling confident that I have seen enough of its merits in practical use to justify me in doing so.

Respectfully,
W. H. BUDD,
Boiler Inspector Fidelity and Casualty Co., N. Y.

The Union Steel Co., Chicago, Ill., put in a small trial plant, taking water from the Chicago river at about its filthiest point, to determine if they could use it for mechanical purposes; with such success that they have since ordered a plant having a capacity of over a million gallons daily.

The Joliet Steel Co., Joliet, Ill., after testing in a most thorough manner one of our filters having a capacity of 40,000 gallons daily, have ordered a plant with a capacity of over half a million gallons daily.

The Cleveland Rolling Mill, Cleveland, Ohio, after having tested this system in one department, have ordered a second plant for their wire mill.

The North Chicago Rolling Mill has ordered a plant, and the Worcester, (Mass.), Steel Works, have one in successful operation.

"Manufacturers should examine the Hyatt Filter. It will pay them to do so."—*American Manufacturer*, Pittsburgh, Pa.

"The Hyatt Pure Water System is being adopted in various industries with great success and satisfaction. These filters are doing excellent work, and those who want clear water and clean boilers will do well to examine them."—*Power*, N. Y.

"There is no better evidence of perfect work than duplicate orders for the apparatus that does it. The (Western Steel) Company have recently ordered two large additional filters of the same make (The Hyatt.) It is certainly doing remarkably excellent work."—*Mechanical Engineer*, N. Y.

"The Hyatt Filter has been doing excellent work throughout the country; and especially in the Southern States, where the water is turbid. Those who desire satisfactory treatment of their water supplies, whether in quantities large or small, will do well to thoroughly examine the Hyatt System and see it in operation."—*Baltimore* (Md.) *Manufacturers' Record.*

PAPER MAKERS.

Perfect paper cannot be made without perfect water. Manufacturers require it always, in great abundance. It is so largely used in every process that its character is indelibly impressed on the paper. Foul or discolored water materially injures or ruins it. In localities having large supplies and otherwise well adapted to paper mills, impurities in the water are a very serious disadvantage; and paper makers' investments are too large to allow risks or experiments. Heretofore no filter could be relied on to give a continuous supply of clear bright water, at reasonable cost, but all difficulties are overcome by the Hyatt system. We wish to emphasize our guarantee, made on other pages, by saying that we will purify all the water used in any paper mill, so as to give satisfactory results, or claim no pay for erecting and removing our plants. They never fail. Those who adopt them take no risks. We have plants in some of the best paper mills in the United States, and in placing filters in all parts of the country, treating all kinds of water supplies, we have never been called upon to remove a single plant. Our success has been uniform and unprecedented. Some who have adopted our system testify that it is doing "more than was claimed."

The Geo. W. Wheelwright Paper Co., Boston, Mass., after expending large sums of money, without success, endeavoring to clarify their water by means of other filters, have adopted the Hyatt system, as have also the Hudson River Water Power and Paper Co., Mechanicville, N. Y., and the Winona Paper Co., Holyoke, Mass. These plants when completed will have capacities of from one to two millons gallons daily, and will be larger than any other plants ever erected for paper manufacture. An invitation is extended to all interested in this subject to visit these plants and see the results effected.

Messrs. Martin & W. H. Nixon, the well-known paper manufacturers, have a plant of 750,000 gallons daily capacity, and make the finest quality of white paper. This they could not do previously with foul water. The supply is taken from the Schuylkill river, below the dam, independent of the city supply.

Office of Martin & Wm. H. Nixon,
Philadelphia, April 17, 1885.

Newark Filtering Company.

Gentlemen—Your letter received, contents noted. You are at liberty to use our name as reference to what experience we have had with the Filters.

Very respectfully,
MARTIN & WM. H. NIXON.

Office of Diamond Mills Paper Company, 44 Murray St.,
New York, April 20th, 1885.

Newark Filtering Company.

Gentlemen—We are in receipt of your favor of the 18th inst., and in reply will cheerfully testify to the merits of your Filter. You can use our name as you desire.

Truly yours,
G. W. THOMPSON, *Secretary.*

Messrs. Z. Crane, Jr., & Bro., whose fine quality papers are widely known, write:

Z. Crane, Jr., & Bro., Paper Manufacturers,
Dalton, Mass., Oct. 9th, 1886.

The Newark Filtering Company.

Gentlemen—The Hyatt Filter that you furnished us last summer has worked to our satisfaction.

Yours truly,
Z. CRANE, JR., & BRO.
B.

At Holyoke, Mass., are some of the largest paper mills in this country.

The Riverside Paper Company, manufacturers of superfine writing and bristols, requiring perfectly pure water, have one of our filters, and permit us to use their name as reference. Mr. J. H. Appleton, Treasurer of the Company, writes: "As long as we used filters we found the Hyatt the best."

The Massasoit Paper Manufacturing Company is another very large company, making the finest grades of paper. Superintendent Proctor writes that the Hyatt Filter gives about seven times as much capacity as other filters he had tried, requires much less work in cleaning, and perfectly purifies the water at its worst stages.

We also have plants in the mills of Crane Bros., Westfield, Mass.; Vernon Bros., Westfield, Mass.; the Carew Paper Company, South Hadley Falls, Mass.; H. F. Watson, Erie, Pa., and in other places.

"This system is based upon thorough scientific and mechanical principles. With the Hyatt Filter within reach of paper-makers, water obtained from rivers, springs or wells can be rendered perfect in quality and of sparkling purity, and sent to the mills free from earthy and vegetable matter, iron or other minerals in solution."—*Paper Trade Journal*, New York.

"It has received the highest recommendations, and is endorsed by leading scientists, sanitarians, civil engineers and manufacturers throughout the country. Paper manufacturers are recommended to thoroughly examine the principle on which the Hyatt system is constructed, and to judge of its merits by results accomplished by plants in operation."—*United States Paper Maker*, N. Y.

TEXTILE MANUFACTURES.

There is no industry where clean, soft water is more necessary. It is used constantly, washing and scouring goods, in the dye shops and in the bleacheries, and must be clean. Where it is subject to freshets and floods, that load it with mud and sediment, work must be entirely suspended till the discoloration disappears. These suspensions sometimes aggregate three months during a single year. "There is no department," says the *Textile Record*, "that is not improved by having the water as clear as possible." "On the purity and suitability of water to the intended purpose," says the *Textile Colorist*, "depends the dyer's success."

At Cohoes, N. Y.. we have plants aggregating over 3,000,000 gallons daily. Manufacturers taking water from the Mohawk River were unable to use it for a quarter of the time. To scour goods with it would ruin them. After filtration by this system the water is used in the finest bleaching and dyeing processes without interruption. Those using the Hyatt system would not be without it. They claim not only a great saving of time, but better results and enhanced value of their goods from the purity of the water.

Appended are testimonials:

Office of Star Knitting Company,
Cohoes, N. Y., April 23d, 1885.

Newark Filtering Company.

Gentlemen—We have used one of your five foot Hyatt Filters for the last nine months. The water of the Mohawk River has been very muddy and largely impregnated with clay. We have had sixty gallons of pure, clean water per minute. Without your Filter we could not have scoured our goods for one-third of time since you put in the Filter. It has done all you recommended it to do; we are entirely satisfied with it, and cordially recommend it as the only good Filter we know of.

O. G. CLARK, *Agent.*

Office of the Globe Knitting Mill,
Cohoes, N. Y., April 23d, 1885.

Newark Filtering Company.

Gentlemen—The Hyatt Filter we purchased of you in March, 1884, has given us perfect satisfaction. We have used it continuously and have not laid out one cent for repairs. It filters our muddy water as clear as spring water, and we have not had to stop on account of bad water since we put it in position.

Very truly yours,
LE ROY & LAMB.

Office of Diamond Knitting Mills,
Cohoes, N. Y., April 30th, 1885

Newark Filtering Company.

Gentlemen—We take great pleasure in stating that the Hyatt Filter, now in use by us, has given for the past eight (8) months the most complete satisfaction, cleansing the dirtiest water that we ever have in the Mohawk (100 gallons per minute) with but little care and attention. We are surprised that we ever ran the mill without one.

Yours truly,
J. W. HIMES,
Proprietor Diamond Knitting Mills.

Office of Neil & McDowell,
Cohoes, N. Y., April 23d, 1885.

Newark Filtering Company.

Gentlemen—The Hyatt Filter which you placed in our mill last fall has done its work handsomely. We have been able to scour our goods every day, however muddy the water has been, and are therefore entirely satisfied with the filter.

Yours very truly,
NEIL & McDOWELL.

Office of Troy Manufacturing Company,
Cohoes, N. Y., April 22d, 1885.

The Newark Filtering Company.

Gentlemen—We have used one of your Filters for about one year and are well pleased with it, and can cheerfully recommend the same. By its use we are enabled to use our water clear and bright at all times, and we find it a great advantage during a freshet, when our water is very muddy.

TROY MANUFACTURING CO.,
By Jno. V. S. Lansing, *Treasurer.*

OFFICE OF PARSONS MANUFACTURING COMPANY,
COHOES, N. Y., April 24th, 1885.

Newark Filtering Company.

GENTLEMEN—The Filter you put in for us last fall is doing all you said it would, and has proved in the highest degree satisfactory.

Yours truly,
T. W. PEASE, *Superintendent.*

OFFICE OF ATLANTIC MILL,
COHOES, N. Y., April 23d, 1885.

Newark Filtering Company.

GENTLEMEN—We have had in constant use for the past four months one of your fifty-inch Filters, and can only say that we have not been disappointed with its work in any particular during that time; it has done all that you claimed it would do, and gives us an abundance of perfectly clear water.

Truly yours,
HORROCKS & VAN BENTHUYSEN.

OFFICE OF W. H. & D. AKIN,
COHOES, N. Y., April 24th, 1885.

Newark Filtering Company.

GENTLEMEN—We have been using one of your forty-inch Hyatt Filters at our mills since December last and during most of the time the water from the Mohawk, which we use, has been very muddy; but after passing through your filter comes out as clear as crystal, and in sufficient quantity to enable us to do our washing and bleaching without any delay whatever. We also find it equal in every respect to your guarantee and cheerfully recommend it to others.

Yours, etc.,
W. H. & D. AKIN,
Knit Goods Manufacturers.

To the Newark Filtering Company.
COHOES, N. Y., April 23d, 1885.

GENTLEMEN—Would say in reference to the Hyatt Filter that was placed in our mill last fall, that it has given entire satisfaction in all respects. We are able to scour our goods at all times, no matter how dirty the water may be, and can cheerfully recommend the Hyatt Filter to any one that may have use for a filter.

Respectfully yours,
H. S. BOGUE.

At New Brunswick, N. J., we placed a plant in the Norfolk and New Brunswick Hosiery Co.'s mill, with a capacity of 600,000 gallons per day. It has been in use over two years, rendering Raritan Canal water bright and sweet, so that it is used for factory purposes and drinking in preference to the city water by over one thousand hands in the factory.

OFFICE OF NORFOLK AND NEW BRUNSWICK HOSIERY COMPANY,
NEW BRUNSWICK, N. J., February 18th, 1886.

DEAR SIR—With reference to the Hyatt Filters, which we have in operation on these premises, I would say that we are fully satisfied with the quantity and quality of the work done—in fact, the machines exceeded our expectations. Where we formerly paid $5,000 to the city per annum for water, we find that we can get a better article from the canal for about $1,200 per annum by use of the filters. In the $1,200 per annum we charge the interest on plant, cost of steam and attendance. We use alum as a coagulant, and after repeated analysis find no trace whatever in the water; hence infer that it must unite with the impurities and be carried off in the wash water. We should be pleased to show you the filters in operation at our works at any time that may suit your convenience.

Yours respectfully,
CHAS. E. SPENCER, *Superintendent.*

The Schuylkill River water is treated with equal success and satisfaction, surpassing all expectations.

OFFICE OF THE SAUQUOIT SILK MANUFACTURING COMPANY,
PHILADELPHIA, September 30th, 1885.

Newark Filtering Company.

GENTLEMEN—The Hyatt Filter has been in use for three weeks, in which time we have sufficiently noted its qualities to cheerfully add our name to your list of references and testimonials. We trust that its continued use will not alter our present high opinion of it, as it surpasses our expectations. The simple method of cleansing, and the fact that the pressure is not practically decreased, are advantages that we especially beg to emphasize.

Very respectfully,
SAUQUOIT SILK MANUFACTURING CO.

Later returns confirm above.

Newark Filtering Company.
PHILADELPHIA, Pa., August 23d, 1886.

SIRS—We have been using your filter for some time and concede all your claims for same. It has been serving our purpose admirably, and to any who need a clear water we can cheerfully recommend it.

Yours,
JACOB MILLER & SONS,
Shirt Manufacturers, 32 *North 3d Street.*

Mohawk River water has been referred to. Below is given a letter from Waterford where is a plant of 60,000 gallons daily capacity:

OFFICE OF EUREKA KNITTING MILLS,
Newark Filtering Company.
WATERFORD, N. Y., April 23d, 1885.

GENTLEMEN—We have one of your 50-inch Hyatt Filters in operation for the last eight months, and it has given us entire satisfaction, performing its work as represented in every particular, filtering the most dirty and filthy water bright and clean at all times. The quantity of water that we are able to filter is far in excess of your guarantee and on the whole we are more than pleased with our Filter, and have no hesitancy in saying that we consider the money invested in our Filter the best investment we have ever made. As to the expense in pumping, we cannot estimate the difference, but in our case the increase of pressure on the pump is only five pounds. It would be less than that, but we are forcing more through than originally intended.

Yours respectfully,
FORD & PYNES.

Messrs. Earl & Wilson, the widely known manufacturers of men's linen collars and cuffs, have one of our filters, and write:

OFFICE OF EARL & WILSON,
Newark Filtering Company.
TROY, N. Y., February 23d, 1885.

GENTLEMEN—We are very much pleased with the Filter. Can say before we had it that we had a great deal of mud, dirt, etc., in our boilers. Since using the Filters we have no such complaints. Would not be without it for anything. We find it very little trouble indeed to clean or renovate. It is a grand Filter, and we can recommend it highly to all who require good, clean, clear water. Yours truly, EARL & WILSON.

At the Clark Thread Works, Newark, N. J., is a very full plant; capacity 275,000 gallons a day. The water is used to wash and bleach the thread manufactured by this well-known company, with most excellent results.

OFFICE OF CLARK THREAD COMPANY,
Newark Filtering Company.
NEWARK, N. J., May 17th, 1884.

GENTLEMEN—In answer to yours of May 16th, would say that you may place our name among your references.

Yours truly,
CLARK THREAD CO., PER CONTRELL.

"This is one of the most complete systems, probably, that has ever been introduced into this country. This machine is based on scientific principles, and any intelligent man who examines its processes will perceive that it must inevitably do the work claimed for it."—*Textile Record*, Philadelphia.

"It successfully eliminates mud, clay and vegetable impurities, not only, but will remove the hardness from water so as to prevent scale in steam boilers; and is adapted to every condition requiring clean, bright, soft water in any quantity. Those who have adopted this system speak in the highest terms of it."—*Textile Colorist*, Philadelphia.

"It need scarcely be said that whatever will purify Chicago River water will do almost anything in that line. The Hyatt system is meeting with deserved success wherever introduced."—*Boston Journal of Commerce.*

LAUNDRIES.

The reputation and patronage of a laundry rests on the snowy appearance of its white goods, and only with clean soft water can this be obtained. With hard or discolored water, caustic soda and other powerful detergents are often used at the expense of the goods, and soap is wasted in great quantities, but the results are unsatisfactory to customer and laundryman.

"It is a most uneconomical proceeding," says a well-known English writer, "to wash anything in soap and water alone without previously softening the water. Not a particle of soap can become available for washing purposes until all the soluble lime in the water has combined with the amount of soap it requires to form an insoluble lime soap." This substance is a greasy, sticky, oily compound, perfectly insoluble and most difficult to wash away afterwards by any treatment. It is this that causes the yellow, grayish deposits on the edges of collars and cuffs washed simply with hard water and soap.

We guarantee to render hard water perfectly soft, and the muddiest water clean and bright. The saving of soap and labor thus effected soon exceeds the cost of the filter, and laundrymen adopting our filters increase their patronage. One to whom we are permitted to refer doubled his business by using a Hyatt filter, his goods being so much whiter than those of his competitors.

The Ohio River water, especially near the mouths of the Licking and other tributaries, is among the worst that laundrymen are compelled to use. It is always muddy, the only changes being when it gets more muddy. The effects of our system in filtering this water are remarkable. They render it beautifully clean and soft in any desired quantity. Scarcely a laundryman in Cincinnati is without a Hyatt filter, and they are enthusiastic, as this is the only one that gives satisfaction.

OFFICE OF THE ELECTRIC LAUNDRY,
CINCINNATI, April 1st, 1885.

I have used the Hyatt Filter for some months past, during the worst condition of the Ohio River water, and found it reliable and satisfactory in all respects. Consider it fully all it is guaranteed to be by the Newark Filtering Company.

GEORGE MOHN, JR., *Manager.*

We endorse the above. Would not do without it.
BARTON & STEELE, *Eureka Laundry.*

OFFICE OF THE EXCELLENT STEAM LAUNDRY COMPANY,
CINCINNATTI, O., April 2d, 1885.

We have used the Hyatt Filter on all conditions of the Ohio River water, and it does the work perfectly. In all respects it is indispensable to us in our business, and we cheerfully recommend it to any one needing a perfect filter.

H. C. VINCENT, *Manager.*

OFFICE OF WHITE STAR STEAM LAUNDRY,
CINCINNATI, O., April 2d, 1885.

We have used the Hyatt Filter in our works for some time past, during which we have had to deal with all conditions of the Ohio River water, and we do most cheerfully say that it has done its work perfectly, and that it is indispensable to us in our business. We heartily recommend it to any one in need of a filter.

Respectfully,
WHITE STAR STEAM LAUNDRY CO.,
GEO. E. ROSSETER, *Sec. and Treas.,*
CHAS. G. WATERS, *Manager.*

PEARL STEAM LAUNDRY WORKS,
TOLEDO, OHIO, September 25th, 1886.

We have used one of the Hyatt Filters for over one year and a half, and can say that we have used less soap and material for softening water, in comparison to the quantity used, than in the seven years we have been in business, because we have had perfectly pure water.

E. J. CANNAN.

CONVENT OF NOTRE DAME, 6th Street,
CINCINNATI, April 20th, 1885.

Newark Filtering Company.

We are pleased to inform you that the Hyatt Filter which you put up in our laundry fully satisfies our expectations. The labor of washing-day is greatly diminished since we have been using it.

Respectfully yours,
SISTERS OF NOTRE DAME.

The Mississippi River water at New Orleans is loaded with sediment and clay the year round, at some seasons much more heavily than others. This is so intimately mingled with the water that heretofore no filter could entirely remove it. Our system succeeds perfectly, rendering the water clear as crystal.

OFFICE OF CHALMETTE STEAM LAUNDRY,
NEW ORLEANS, LA., January 28th, 1886.

Newark Filtering Company.

GENTLEMEN—In reply to yours of this inst., I take pleasure in saying we have been using one of your 40-inch Filters, filtering Mississippi River water for all our laundry and boiler use, and cheerfully recommend it to all wishing to use bright, clean water.

Yours truly,
R. A. FOX, *Manager.*

OFFICE OF THE TROY LAUNDRY COMPANY, 88 and 90 N. Rampart Street,
NEW ORLEANS, LA., January 27th, 1886.

Newark Filtering Company.

GENTLEMEN—We take pleasure in answering yours of this inst., and cheerfully say we have given the Hyatt Filter a thorough test, filtering the Mississippi River water for all laundry and boiler use, and giving us an ample supply of bright, clear water, and has greatly reduced our expenses, both in fuel and in general work, and we cheerfully recommend it to all who need a perfect filter.

Yours truly,
RICE & PIERCE, *Proprietors.*

TROY STEAM LAUNDRY,
ATLANTA GA., September 9th, 1886.

Newark Filtering Company.

GENTLEMEN—We wish to express our satisfaction with your filter and our appreciation of your success of establishing a system of filtration that is absolutely reliable under all conditions. Our water is perhaps as difficult to clarify as any water could be, the coloring matter in the water being mineral (iron) in its nature, and of particles so minute as to be almost impossible of separation. After much experimenting with other makes and with filters after our own construction, we put in one of yours, which has been in successful operation for about a year. It has never been out of order nor failed to do its work. We would cheerfully recommend your filter to all whose business requires pure water.

Very respectfully,
J. F. BECK & CO., *Proprietors.*

OFFICE OF DALLAS STEAM LAUNDRY,
DALLAS, Texas, July 15th, 1886.

Newark Filtering Company.

GENTLEMEN—Your Hyatt Filter has been in operation three days in my laundry, and I can cheerfully say I would not do without it for many times its cost. The muddy river water I was compelled to use is made bright and clear, and the only obstacle to my business is removed, and I am satisfied my business will soon be doubled by the results attained from your perfect filter.

Your truly,
G. S. LEACHMAN, *Proprietor.*

BOSTON LAUNDRY,
236 and 238 NEW STREET, PHILADELPHIA, Pa., July 3d, 1886.

Newark Filtering Company.

GENTS—I have had your filter in use for several weeks and have much pleasure in stating that I am very much pleased with the results in every respect; as regards quantity and quality. In fact the filtration is perfect, and I will recommend the same cheerfully.

Yours truly,
THOMAS E. HOUSTON.

"It is constructed on scientific principles, is practically indestructible, readily managed, is not liable to get out of order, and is a wholly reliable and effective filter."—*National Laundry Journal*, Chicago.

ICE MANUFACTURERS.

Pure ice is just as necessary as pure water, especially if used to cool drinking water. It is mistakenly supposed by many that all living objects are destroyed by freezing, and that water once frozen into ice no longer contains the germs that may be found in it under ordinary conditions and temperature. The falsity of this supposition has been demonstrated by many sad experiences. As soon as they are thawed out the germs are as active as ever and just as dangerous. Good ice can only be manufactured out of good water free from all deleterious substances. The success of our filters and system has been very marked in this line of industry. The artificial ice made from water filtered by it is clearer and better than natural ice. One establishment in Washington, D. C., freezes thirty tons of this filtered water daily, and distributes it throughout the city.

Much of the year the Potomac River is very turbid, but our system renders it beautifully clear and pure.

OFFICE OF THE TRANSPARENT ICE MANUFACTURING COMPANY.

Newark Filtering Company.

GENTLEMEN—We have tried many kinds of filters, and must say that the Hyatt system is the only one that we know of or have tried that amounts to anything, You are aware that the Potomac, which is our source of supply, is very turbid in the winter season and after storms. Since we adopted the Hyatt Filters we have had pure, bright and wholesome water at all times. We freeze thirty tons of this filtered water daily. Our stockholders are pleased and our customers thoroughly satisfied.

Yours truly, GEO. A. SMITH, *Superintendent.*

OFFICE OF CHAMPION ICE M'F'G AND COLD STORAGE COMPANY,

Newark Filtering Company. COVINGTON, KY., April 3d, 1885.

GENTLEMEN—After testing the matter to our entire satisfaction, we concede that the Hyatt Filter is the only one that will filter the Ohio River successfully. Previous to buying one of yours we had experimented upon a dozen others and failed to get clear water. With our large filter, bought of you, we have now plenty of water for all purposes. The water is "the finest," clear as crystal, and we can scarcely conceive how we carried on our business without it. It is a great satisfaction, a big success. We are filtering the *worst water on earth*, our factory being located just below the mouth of the Licking River, which is very muddy eight months of the year and filthy and dirty the other four months. We endorse the Hyatt all the time.

Respectfully, CHAMPION ICE M'F'G AND COLD STORAGE CO.
Per R. W. DUGAN, *Superintendent and Treasurer.*

Newark Filtering Company. NEW ORLEANS, LA., April 8th, 1885.

GENTLEMEN—In answer to your question as to how we like the Mississippi River water for ice making, we can honestly say that had we not your Filters our business and ice manufactory would not be a success. Having for the last three months used the Mississippi water filtered by the Hyatt Filters on exhibition at the World's Exposition, we can safely and with great pleasure say that the results are in every way most satisfactory ; the ice produced is as clear and free from all foreign matter in suspension as any made from distilled water. It does not possess any disagreeable or unpleasant taste, as that made from condensed steam. In fact, it possesses *all* the good qualities of natural ice, and we are able to surpass that in weight per cubic foot. We take great pleasure in recommending them to all ice manufacturers and others wishing a clear and sparkling water. I am

Yours respectfully, M. M. HERNZ,
Supt. and Chief Engineer of Linde, Smith & Co.

Office of The Distilled Water Ice M'f'g Co.,
Cairo, Ill., June 10th, 1886.

Gentlemen—Be kind enough to put us down under the head of unsolicited testimonials, for we cannot help but express to you our high appreciation of the Hyatt Filter you put in operation for us. It is to those who use the Ohio River water in their steam boilers a complete revolution. From the turbid water of the Ohio, that gave nothing but a dangerous scale and superfluity of mud in our boilers, the Hyatt Filter is giving as a product a water of crystal pureness, that has stopped all scale formation and leaves them absolutely clean ; and from such cleanness we estimate we are saving ten per cent. in our fuel bills ; and furthermore, the positive assurance we feel at all times that our boilers are safe from blistered sheets and collapsed flues—making your filter worth its weight in gold to any user of Ohio River water.

THE DISTILLED WATER ICE M'F'G CO.,
F. L. Galigher, *Manager.*

BREWERIES AND DISTILLERIES.

We have placed our Filters in breweries and distilleries with results never before attained. Every drop of water used in these large establishments, whether for brewing, distilling or steam generating, is rendered perfectly pure, soft and clear. One plant supplies a great abundance for every purpose. Brewers fully understand how essential to their success is a water of this character, as carbonates, sulphates, nitrates, chlorides, etc., manifestly affect the beers and ales injuriously, "promoting the solution of the coloring matter in both malt and hops," says a well-known authority, "dissolving the coarse, resinous, bitter principles of the latter, and so acting on the yeast as to lower its vitality and promote the growth of minute organisms." Our guarantee is to remove all these substances, and thus furnish a water of the best quality for brewing purposes and for use in the steam boilers.

The Louisiana Brewing Company have a plant of about 400,000 gallons daily capacity, and use the filtered water for all their brewing purposes. They write :

Office of the Louisiana Brewing Company,
Newark Filtering Company. New Orleans, La., January 15th, 1886.

Gentlemen—We are using one of the Hyatt Filters, filtering Mississippi River water for all our beer and boiler use, and it does the work perfectly in all respects. It is indispensable to us in our business, and we cheerfully recommend it to any one needing a perfect Filter. P. W. DIELMANN, *President.*

The Brewing Company, whose testimonial follows, has a filter of about 40,000 gallons daily capacity :

Office of the Christian Moerlein Brewing Company,
Newark Filtering Company. Cincinnati, April 2d, 1885.

Gentlemen—We have used the Hyatt Filter for sufficient time to test its efficiency on the Ohio water in its different stages in supplying our boilers and ice machines. We are thoroughly satisfied with it, and cheerfully recommend it to any one in need of a reliable Filter. THE CHRISTIAN MOERLEIN BREWING CO.

The Keystone Brewing Co., Pittsburg, the Somerset Distilling Co., Millstone, N. J., E. W. Cook & Co., Buffalo, and the Phœnix Distilling Co., Chicago, Ill., are among our customers.

"It is not a mere straining apparatus, but a system utilizing nature's methods so ingeniously as to insure perfect results in every instance. It has had wonderful success in every part of the country, has treated all kinds of water, and its record shows not a single failure. A number of brewers have already adopted it with advantage and satisfaction."—*Brewers' Journal*, N. Y.

BOTTLING ESTABLISHMENTS.

Carbonated waters, to be of the finest quality and to give the brilliant sparkle that is their essential feature, must be made of water that is pure, clear and free from lime and other alkalies. A poor water will often baffle the most skillful bottler's efforts and ingenuity, causing failure, or reducing the grade of goods that would otherwise be excellent. The Hyatt System removes all lime and magnesia, extracts all clay or discoloration, and leaves the water in the best condition for treatment by the various carbonating processes. Water that was, before treatment, utterly incapable of being made into first grade goods, sparkles with beauty and brilliancy after, and the beverages manufactured from the filtered water rank with the very best. There is great economy as well as advantage in adopting the Filters, as a single plant will furnish all the water necessary to manufacture pure beverages, and also a supply for boiler uses.

THE CHARLES ZUBER BOTTLING WORKS,
STEUBENVILLE, O., December 19th, 1885.

Newark Filtering Company.

DEAR SIRS—I have tried your Filter and found it a success. It works like a charm. The water here in the Ohio River is very muddy and full of animal and vegetable matter, the river being very high; but by using your Filters the water becomes bright, clear and sparkling. I am entirely satisfied with your Filter and can cheerfully recommend it to all bottlers, as no bottler can make good goods without one.

Yours respectfully,
CHAS. ZUBER.

OFFICE OF EAGLE BOTTLING WORKS,
CINCINNATI, April 3d, 1885.

Newark Filtering Company.

I take pleasure in certifying that the Hyatt Filter, which I am using, is giving perfect satisfaction, and feel fully justified in recommending said Filter to any one desiring a perfectly reliable Filter.

A. C. GILLIGAN, *Proprietor.*

THOMAS CLEMENTS, BOTTLER AND MANUFACTURER,
234 AND 236 QUEEN ST., PHILADELPHIA, May 21st, 1886.

Newark Filtering Company.

GENTLEMEN—I have had your Filter in use for about two months and can simply express myself by stating that in every respect it surpasses my expectation, and I cheerfully recommend it to any party who wants a good, serviceable Filter.

Yours truly,
THOMAS CLEMENTS.

"With such a system even the hitherto unyielding prejudice against scientific treatment must disappear and the urgent problem how to purify the abundant but contaminated supplies of many of our great cities will be solved for an indefinite period."—*National Bottlers' Gazette*, N. Y.

HOTELS, ETC.

In hotels and public institutions our filters give marked satisfaction to guests and proprietors. In many of the largest hotels in the country, where the water has heretofore been unpalatable and unpopular, the adoption of our filters has resulted in such beauty and purity of the water as to elicit the highest commendation, and manifestly increase the popularity of the hotel. Among our references are the Arlington Hotel, Washington; Hotel Duquesne, Pittsburgh; and the principal hotels in Cincinnati, New Orleans, Atlanta, St. Louis, Long Branch, and other cities. In each of these the capacity of our purifying system is from 40,000 to 250,000 gallons daily. Frequently the hotels advertise that the water they use is purified by this system, and exhibit it in large, handsome glass jars.

Newark Filtering Company. GIBSON HOUSE, CINCINNATI, February 12th, 1886.

DEAR SIRS—Our source of water supply is the Ohio River, which is, as you are probably aware, a very turbid stream, and contains a very large amount of suspended and organic matter. Our impure water was formerly a source of great annoyance, if not disgust, to ourselves and our guests. About two years ago we adopted the Hyatt system of purification by coagulation and filtration, and take pleasure in stating that we are entirely satisfied with it; in fact, we consider it indispensable. It gives us constantly a supply of up to 250,000 gallons daily, which we use for drinking and all other purposes. As this filter is automatically cleansed every day, its workings are just as perfect as the first day it was put in. Very respectfully, THE GIBSON HOUSE COMPANY,

A. G. CORRE, *President.*

In the Burnet House is another plant of 250,000 gallons daily capacity. The manager writes:

BURNET HOUSE, CINCINNATI, O., January 30th, 1886.

DEAR SIRS—We take pleasure in recommending the Hyatt Filter. We have one supplying our building in all its departments, and would not be without it.

Very respectfully, T. B. ZIMMERMAN, *Manager.*

In the St. Nicholas Hotel we have a plant of 40,000 gallons daily capacity:

Newark Filtering Company. ST. NICHOLAS HOTEL, CINCINNATI, O., January 30th, 1886.

GENTLEMEN—I have had a Hyatt Filter in use in this hotel for about a year past, doing service at all stages of the Ohio River, and find it to be reliable in all respects, therefore cheerfully recommend it to any one requiring the services of an efficient filter.

The Hotel Duquesne, Pittsburgh, Pa., announces, in its attractive circular:

"A special feature of the house is the Hyatt Improved Filter, which supplies pure, clear water, not only for drinking purposes, but guarantees a full supply for all rooms and laundry department."

Newark Filtering Company. BOSTON CLUB, NEW ORLEANS, July 10th, 1886.

GENTLEMEN—In response to your request, I take pleasure in testifying that the "Boston Club," has been using the Hyatt Filter for almost a year, in filtering Mississippi water, and up to the present it has given full satisfaction.

Yours, very respectfully, JUSTIN DUREL, *Manager.*

SUGAR PLANTERS AND REFINERS.

Sugar planters and refiners use large quantities of water, and it is often difficult to get a natural supply of the clearness and quality necessary to the most satisfactory results. With the Hyatt filters an abundance can always be had. It is of no consequence how muddy the source, the water extracted is of crystalline clearness, well adapted to refining processes, and particularly desirable to feed steam boilers.

Mr. Duncan F. Kenner has a plant of nearly 500,000 gallons daily capacity on his large sugar plantation near New Orleans. He says:

Newark Filtering Company. NEW ORLEANS, LA., February 11th, 1886.

GENTLEMEN—Your favor of this instant was duly received, and in reply, I take pleasure in saying I have used the Hyatt Filters on three of my plantations, filtering Mississippi River water for all of my boilers and centrifugals, and cheerfully say that we can run through our sugar crop without the necessity of cleaning out our boilers. We think them a great saving in fuel, and with pleasure recommend the Filter to all sugar planters who need a perfect Filter. Very respectfully yours, DUNCAN F. KENNER.

Office of Louisiana Sugar Refining Co.,
New Orleans, La., June 15th, 1886.

Newark Filtering Company.

Gentlemen—We have in constant use five Hyatt Filters, each of 100,000 gallons capacity in twelve hours. We use the Mississippi River water direct, and by a very simple arrangement we inject two or three grains, as the case may require, of the per-chloride of iron (at a cost of two and a half cents per pound) into the water as it leaves the pump, and by the time it is ready to pass through the sand in the filter, all the carbonate and sulphate of lime, magnesia, clay, sand, vegetable matter, etc., have been coagulated and are easily taken up by the sand of the filters, and the water is delivered in our reservoir for general use, as clear, soft and pure as rain water. After running 1000 horse-power of the Babcock & Wilcox boilers for nine months, day and night, on examining the tubes we found no scale in them, and they were as clean as the first day we started. I can, therefore, recommend these filters as the most simple and perfect filters in the market, for factory or family use.

Respectfully yours,
C. H. BERNARD,
Chief Engineer Louisiana Sugar Refining Co.

Ex-Governor H. C. Warmoth, of Louisiana, writes the following to Capt. Symons, in charge of the water supply in the city of Washington. The plant on Governor Warmoth's plantation has a capacity of 130,000 gallons daily:

Magnolia Plantation, Lawrence P. O., La., February 11th, 1886.

Captain Thomas W. Symons, U. S. Engineer:

Dear Sir—I observe that the Senate has directed an investigation of the purity of the water supply of the city of Washington looking to its improvement. I write to call your attention to the invention of the Messrs. Hyatt, of Newark, N. J., for the filtration of water, which I have used in my sugar house for several years. We take the turbid water of the Mississippi River and put it through the Hyatt Filter, and it comes out as clear and limpid as filtered rain water. We run our boilers for months without washing them out, so clear and free from scale is the water. We use it for washing our sugars in the centrifugals, for drinking and all other purposes. Until this Filter was obtained we were constantly burning out our boilers, notwithstanding we washed them out thoroughly every week. These Filters have come into general use in this State with most excellent results, not only for steaming and manufacturing purposes, but for drinking purposes. I filter all the water used by my people on the plantation, also the stock, mules and cattle. I commend to your careful consideration the advantages of the Hyatt system, feeling assured it will give you a full supply of the very best water that can be obtained.

Very respectfully,
H. C. WARMOTH.

Office of Decastro & Donner Sugar Refining Company,
Brooklyn, E. D., May 21st, 1884.

Newark Filtering Company.

Gentlemen—In answer to yours of May 16th, requesting permission to use our name as reference, we will gladly give our consent, as the first Filter put in by you is and has been working very well, and the two just put in are giving entire satisfaction in every particular.

Yours truly,
DECASTRO & DONNER S. R. CO.,
Per H. Russell.

Messrs. McKeon, Borie & Co., the well known sugar refiners of Philadelphia, have one of our plants with a capacity of about 400,000 gallons per day. The foul Delaware River water is pumped up and rendered pure and suitable to use in their refining processes.

William Henderson, New Orleans, has adopted the Hyatt system for his sugar refinery, and writes that it gives entire satisfaction.

MISCELLANEOUS.

At the Cincinnati Industrial Exhibition, in 1884, one of our filters was exhibited and was awarded the first degree of merit. One of the tests to which the filtered water was subjected is shown in the following letter :

Newark Filtering Company. AVONDALE, O., October 28th, 1885.

DEAR SIRS—In answer to your question as to the purity and excellence of the water filtered with the Hyatt Filter, I can say there is no better test of water than to use it for living fish. During the twelfth Exposition, as you are well aware, I used thousands of gallons of Ohio River water purified with your Filter, and can testify to its excellence for aquarium purposes, or any other purpose where absolutely clear water is required.

Very respectfully, CHARLES DURY,
Superintendent Exposition Aquarium.

The Bonsilate Co., of Albany, take their water from the Hudson River, just below the outlet of a main sewer. After purifying it by our system they use it for mechanical purposes.

OFFICE OF THE BONSILATE COMPANY,
ALBANY, N. Y., January 13th, 1885.

GENTLEMEN—We pump from the Hudson River through a six-inch pipe some five hundred feet, and the water is very bad ; without proper filtering we could not use it. Your company replaced the old style filter with one of their new pattern, and this works simply to perfection. Our test is a severe one, as impurities in the water, such as are in suspension, will surely become imperfections in our materials. We pump through the filters to a tank in our fourth story.

Very respectfully yours, ROBERT C. PRUYN, *President.*

ALBANY, December 27th, 1884.

DEAR SIRS—In reply to your inquiry as to the qualities of the Newark Filter, would say that we have used one for the last two years at my house, and find it to be all that we could expect. Our water, which was often very filthy, so that we could not use it, is now clear as crystal, and gives the greatest satisfaction to my family. Our water pressure is such that we have a good flow at all times through the entire house. When the water is very dirty we wash the Filter once a day, but usually let it go three or four days. My family would not part with it for many times its cost.

Truly yours, PETER KINNEAR.

OFFICE OF OGDEN & WRIGHT, ARCHITECTS,
Newark Filtering Company. ALBANY, N. Y., April 18th, 1885.

GENTLEMEN—For the past year one of your Hyatt Filters has been in constant operation in our house ; during that time I have watched closely the result of its workings, and can say without qualification that it is the most complete I have ever seen. I most cheerfully recommend it.

Yours, etc., EDWARD OGDEN.

BROOKLYN, E. D., December 19th, 1884.

DEAR SIRS—In reply to your inquiry concerning the Hyatt Filters, would say that I consider the appliance a success in every way. The mechanical impurities are very completely removed, and the water rendered quite brilliant. The method of washing the sand works very well, and as our filter capacity is ample gives no trouble. The cost of attendance is practically nothing, as one man could keep any number of them in order. We have had no repairs ; the filters have been running about eighteen months.

Very truly, J. V. V. BOOREAM, *Engineer in Chief.*

OFFICE OF AUG. T. POST, Banker,
Newark Filtering Company. NO. 25 NASSAU ST., N. Y., September 11th, 1885.

GENTLEMEN—I feel satisfied with the results of the Filter. We have "bright, clear water," and the pressure is not materially affected by the machine. "I find it a good investment."

Yours truly, AUG. T. POST.

Office of Cunningham & Co.,
Philadelphia, Pa., July, 1886.

Newark Filtering Company.

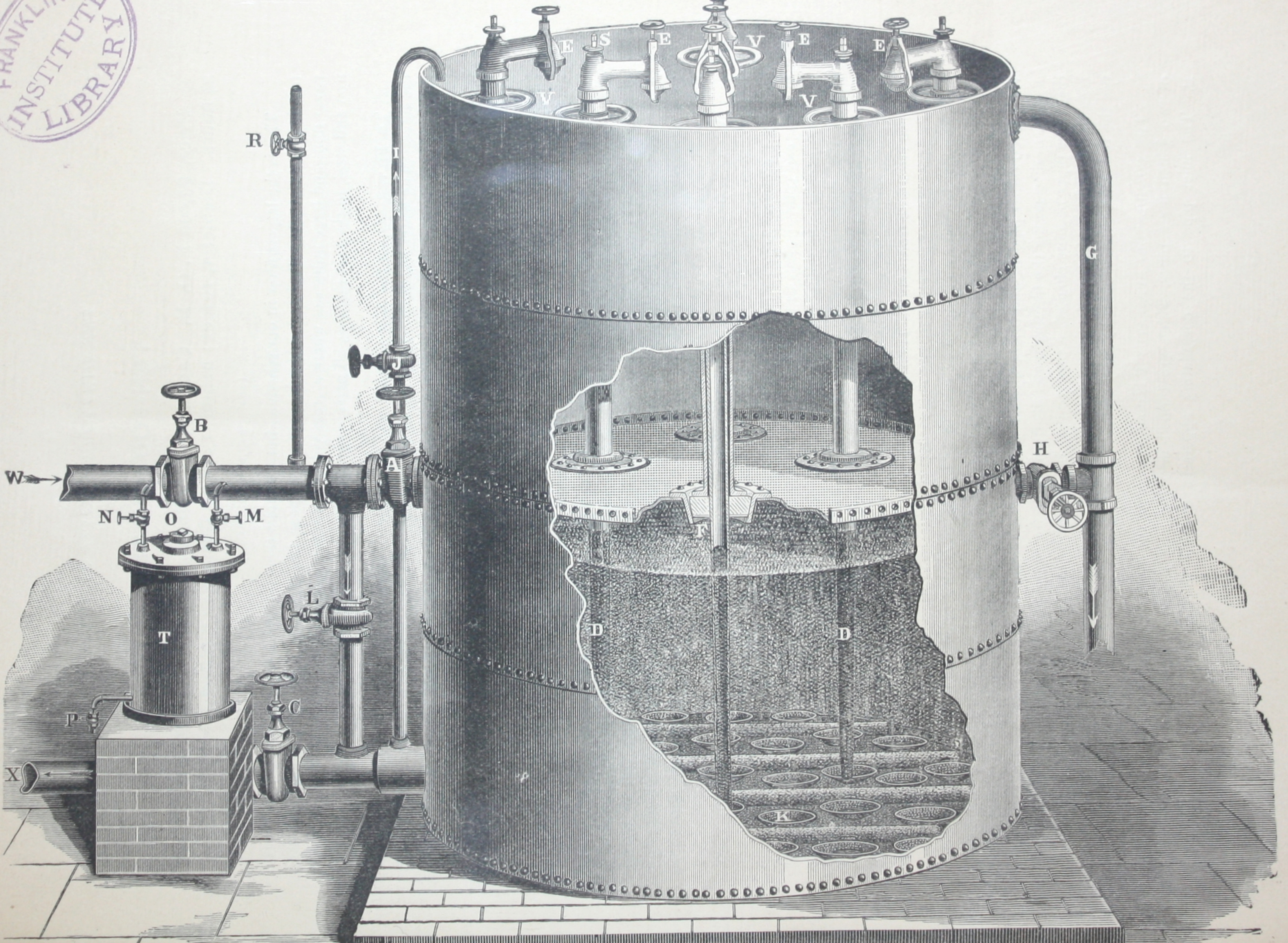
Gentlemen—At your request we can say that your Filter has given us good work since we have had it. It has given us clear water at all times and plenty of it, after we got used to it. We will give it a good name to all.

Yours truly,

CUNNINGHAM & CO.,
518 and 520 Locust Street.

"In this, as in all systems, the best test of its efficacy is actual use. The Hyatt System has been in use several years, and it is claimed that there has not yet occurred a single instance of failure. The company are sufficiently confident of its merits to guarantee every filter, and ask no one to assume any risk of its failure."—*Manufacturer and Builder*, N. Y.

FRANKLIN INSTITUTE LIBRARY



TEN-FOOT FILTER.

Price, $3,000 F. O. B. Capacity, 250 gallons per minute; 325,000 gallons per 24 hours. Diameter, 10 feet; height, 13 feet. Bushels of filtering material, 392.

(SEE PRECEDING PAGE.)

This is the largest filter in our schedule, but we make them to order of any size, up to thirty feet in diameter. It will give an abundant supply of clear, bright water to knitting mills, factories, paper mills and large industries where a great volume of water is used daily. It is made of wrought iron and steel, in the best manner, all parts perfectly adjusted.

TO FILTER—Open the inlet valves A and B and the outlet valve C; close all other valves of the filter. The water will then flow to the filter through main supply pipe W above the filtering material, percolate through it and escape through the cone valves K, which are filled with shot, preventing the filtering material from escaping, but allowing the water to flow freely to the outlet pipe X.

WHEN WASHING—Close the valves A and C on the inlet and outlet pipes, and remove the clamps from the seven valves E at the top of the filter. Then open the valve L on the pipe connecting the inlet and outlet pipes. Water then passes from the inlet to the outlet pipe, thence through the outlet cone valves K and up through the filtering material, loosening it and producing pressure which causes the filtering material to be carried up and discharged through the seven discharge pipes D into the tank or upper compartment, which should always be kept full of water. The filtering material, being heavy, settles immediately to the bottom of the tank, displacing the water which flows out through the upper waste pipe G, carrying with it the silt and other impurities that have been taken from the water previously filtered.

When the filtering material has all been discharged into the upper compartment, close the valve L on the pipe connecting the inlet and outlet pipes, open the lower waste valve H, and then open the seven annular valves F by means of the hand wheels V. This will allow the filtering material in the upper compartment to settle back into the lower compartment, and at the same time gives it a second washing, the falling material displacing the water, which flows off through the lower waste pipe H, carrying with it any impurities not removed by the first washing in the upper compartment.

After the filtering material has all settled back into the lower compartment, wash off the seats of the seven annular valves F by means of hose which connects with pipe R, care being taken to have the seats free from sand. Then close the annular valves F by means of hand wheels V, afterwards replace clamps to valves E, and close valve H.

The first filtered water should be used to fill the upper compartment, as it will not be perfectly bright. This is done by opening the valve A on main supply pipe and the valve J on pipe I extending from outlet pipe to tank. After the tank has been filled, close last mentioned valve and open valve C on outlet pipe X, and bright filtered water will be obtained.

If, in discharging the filtering materials from the lower to the upper compartments, any of the discharge pipes become clogged, a passage may be opened by means of the wrought iron loosening rods S, the ends of which project above the cover of the stuffing boxes on the discharge valves. To use the rods turn them around by means of a wrench.

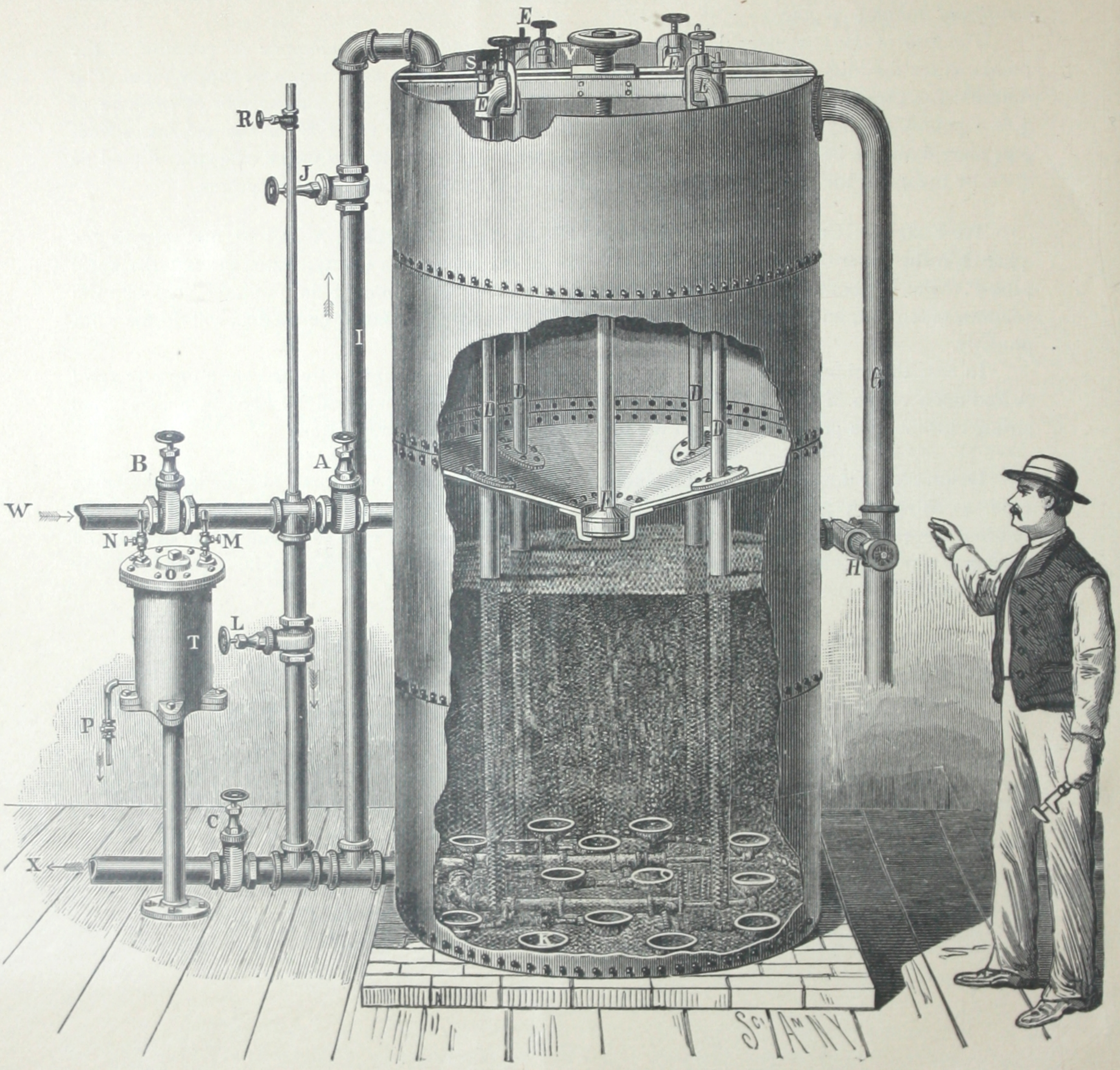
THE COAGULATING APPARATUS T is connected with the main supply pipe to the filter by means of two ½-inch brass pipes, which are tapped into the supply pipe on either side of the gate valve B. The inlet pipe to the coagulating apparatus extends through the cover; the outlet pipe extends nearly to the bottom of the apparatus, thus insuring a good solution of the coagulating agent. In each pipe, between the supply pipe and the apparatus, globe valves N and M are placed. The object is to permit the coagulating apparatus to be removed, if necessary, without disturbing the main piping.

The flow of the coagulant depends upon and is regulated by the difference of pressure at the points where the inlet and outlet pipes, to and from the apparatus, enter the main supply pipe. The difference of pressure is produced by partially closing the gate valve B. A difference of pressure of ¼ to 1 pound, usually about ½ pound, will be sufficient. The globe valve N in the apparatus inlet pipe should always be kept wide open. All further regulation of the flow of the coagulant should be done by means of the globe valve M on the outlet pipe from the coagulating apparatus.

To Fill the Coagulating Apparatus—Close the globe valves N and M, and remove the plug O in the cover of the apparatus. Draw out all the solution in the apparatus through the waste pipe P. Put in about thirty pounds of ammonia alum (crystal or lump); fill the interstices with the solution taken out, and replace the plug O. As little coagulant should be used as will do the work properly.

In case the orifices of inlet and outlet pipes of apparatus become obstructed close the gate valve A and open valves M and N and valve in waste pipe P. The orifices will be freed by means of the strong current thus produced through the inlet and outlet pipes of apparatus.

Discharge Filters, up to and including five feet in diameter, are provided with one discharge pipe, as shown on pages 39 and 42. The six and one-half foot has four; the eight-foot, six; the ten-foot, seven, and larger sizes a proportionate number. In the eight-foot and larger filters, the discharge pipes are either operated at once by a simple automatic hydraulic action, or any one may be worked independently.



SIX AND ONE-HALF FOOT FILTER.

Price, $1,700 F. O. B. Capacity, 100 gallons per minute; 150,000 gallons per 24 hours.

SIX AND ONE-HALF FOOT FILTER.

These filters are 6½ feet in diameter, 13 feet high; are of wrought iron and steel. All the parts are perfectly adjusted and easy to operate. They are especially adapted to large hotels, mills, factories, pumping stations and industries requiring an abundant supply of pure water. They are filled with about 156 bushels of filtering material, two parts coke and three parts sand, all carefully sifted.

To Filter—Open inlet valves A and B and outlet valve C, all other valves being closed. Water then enters the filter above the filtering material, percolates down through it and passes through the outlet cone valves, which prevent the escape of the sand, while the water passes readily through them into the outlet pipe X.

When Washing—Close the inlet valve A and outlet valve C, remove the clamp and ball valves from the discharge valves E, E, E, E at the top of the filter. Then open the valve L on the pipe connecting the inlet and outlet pipes. Water then passes from the inlet to the outlet pipe, thence through the cone valves K and up through the filtering material, loosening it and producing pressure which causes the material to be discharged through the discharge pipes into the tank or upper compartment, which should always be kept full of water. The filtering material being heavy settles immediately to the bottom of the tank, displacing the water, which flows out through the upper waste pipe G, carrying with it the silt and other impurities that have been arrested by the filter bed since the last washing.

When the filtering material has all been discharged into the tank, close the valve L on the pipe connecting the outlet and inlet pipes, open lower waste valve H, and also raise the centre valve F by mean of the hand wheel V at the top of the filter, this will allow the filtering material in the upper compartment to settle back into the lower compartment, and at the same time subjects it to a second washing, the falling material displacing the water, which flows off through the lower waste pipe H, carrying with it any impurities not removed by the first washing in the upper compartment.

After the filtering material has all settled back into the lower compartment, wash off the seat of the centre valve F, by means of a hose, which should be fastened on to the end of the 1¼-inch pipe R, care being taken to have the seat free from sand. Then replace clamp and ball valves, E, E, E, E, close the lower waste valve H, and the filter is ready for work.

The first filtered water should be used to fill the upper compartment, as it will not be perfectly bright. This is done by opening the valve on inlet pipe A, and the valve J on pipe extending from outlet to tank. After tank has been filled close last mentioned valve and open valve C on outlet pipe, and bright filtered water will be obtained.

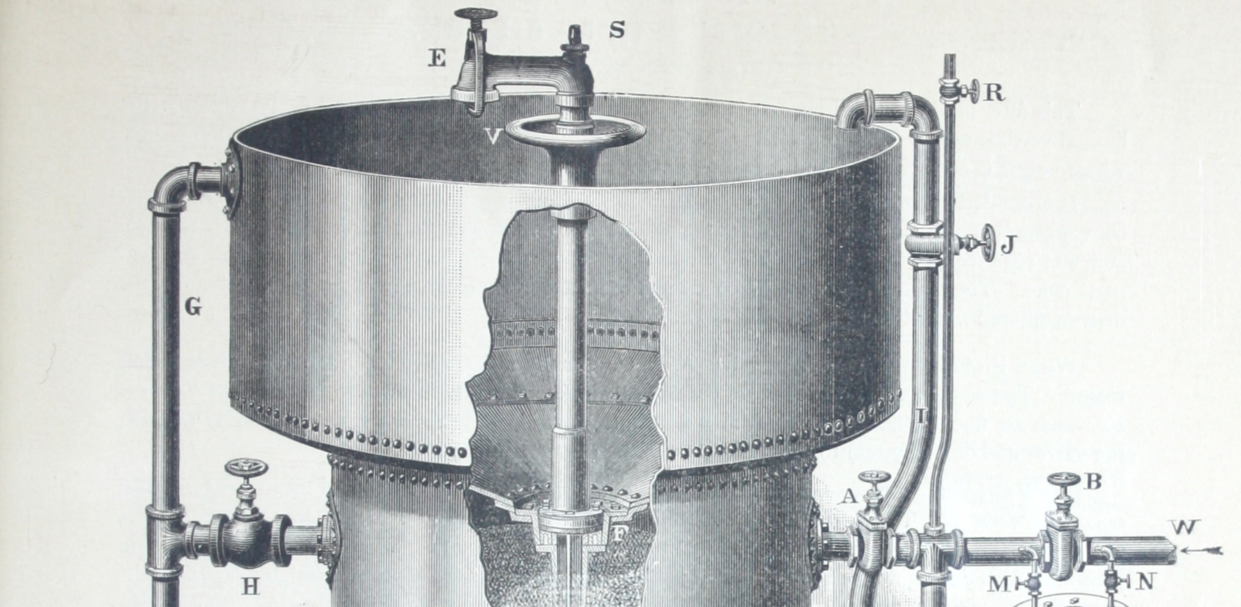
If, in discharging the filtering material a discharge pipe becomes clogged, a passage may be opened by means of the wrought iron loosening rods S, the ends of which project above the cover of the stuffing box on the discharge valves. To use the rods turn them around by means of a wrench.

The coagulating apparatus is connected with the main supply pipe by means of two ¼-inch brass pipes, which are tapped into the main supply pipe at either side of the gate valve B. The inlet pipe to the coagulating apparatus extends through the cover; the outlet pipe extends nearly to the bottom of the apparatus. In each pipe, between the supply pipe and the apparatus, globe valves N and M are placed; also unions are placed between globe valves and apparatus. The object is to permit the coagulating apparatus to be removed, if necessary, without disturbing the main piping.

The flow of the coagulant depends upon and is regulated by the difference of pressure at the points where the inlet and outlet pipes, to and from the apparatus, enter the main supply pipe. The difference of pressure is produced by partially closing the gate valve B. A difference of pressure of $\frac{1}{4}$ to 1 pound, usually about $\frac{1}{2}$ a pound, will be sufficient. The globe valve N on the inlet pipe should always be kept wide open. All further regulation of the flow of the coagulant should be done by means of the globe valve M on the outlet pipe from the coagulating apparatus.

To Fill the Coagulating Apparatus—Close the globe valves M and N, and remove the plug O in the cover of the apparatus. Draw out all solution in the apparatus through the waste pipe P. Put in about 9 pounds of ammonia alum (crystal or lump); fill the interstices with the solution taken out and replace plug O. As little coagulant should be used as will do the work properly.

In case the orifices of inlet and outlet pipes of apparatus become obstructed, close the gate valve A and open valves M and N and valve in waste pipe P. The orifices will be freed by means of the strong current thus produced through the inlet and outlet pipes of apparatus.



SPECIAL FORM FILTER.

Suitable for limited vertical space. Made to order of any size. The forty-inch size: Price, $650 F. O. B. Capacity, 25 to 30 gallons per minute; 40,000 gallons per 24 hours.

SPECIAL FORM FILTER.

(SEE PRECEDING PAGE.)

This filter is of wrought iron. It is constructed in this special form so as to be suitable for limited vertical space. It is especially adapted to inside positions in hotels, laundries, mills, etc. where height is not available, and is made to order of any size required.

It is divided horizontally into two compartments by means of a wrought iron head. The upper compartment is open and is called the tank; the lower compartment is the filter proper. The 40-inch size requires 43½ bushels of filtering material, or upward, by measure, three parts sand and two parts coke. The main supply pipe W conducts the unfiltered water to the filter; the outlet pipe X delivers filtered water.

WHEN FILTERING—Open inlet valve A, valve B and outlet valve C, all other valves being closed. The water enters on the top of the filter bed, percolates down through it to the cone valves K, which are filled with shot that prevent the escape of sand, while the water passes readily through the valves and outlet system to the outlet pipe X.

TO WASH THE FILTER—Close inlet valve A, outlet valve C, remove ball and clamp valve E and open gate valve L. The water flows from the inlet pipe W through by pass pipe into outlet pipe X and thence through the cone valves K, agitating and loosening the bed of the filter and producing pressure which causes the bed to be discharged through the discharge pipe into the upper compartment or tank, which is always to be kept filled with water. The filtering material being heavy, settles immediately to the bottom, displacing the water, which flows away through the waste pipe G, carrying with it the silt and impurities that have been collected while filtering.

When the sand has all been discharged into the tank, close the valve L, open the valve H and the annular valve F by means of the hand wheel V. The filtering material then returns through the annular valve F from the upper to the lower compartments, thus receiving two washings; R is a ¾ inch pipe, to which a rubber hose is to be attached, that should be used to wash off the valve seat before closing the annular valve. Close annular valve F, close waste valve H, close clamp and ball valve E and open inlet valve A; open valve J, which will deliver the first filtered water into the tank or upper compartment, to be used at the next washing. After the tank or upper compartment has been filled, close valve J in pipe I and open outlet valve C, which will deliver clear, bright water.

The loosening rod S may be used to open a passage in the discharge pipe, if it should from any cause become clogged.

THE COAGULANT APPARATUS is connected with the main supply pipe by means of two ¼-inch brass pipes, which are tapped into the supply pipe on either side of valve B. The inlet pipe extends through the cover of the apparatus. The outlet pipe extends nearly to the bottom. In each pipe, between supply pipe and apparatus globe valves M and N are placed; also unions are placed between the globe valves and apparatus. The object is to permit the apparatus to be removed (should it become necessary) without disturbing the main piping.

THE FLOW OF THE COAGULANT depends upon the difference of pressure at the points where the inlet and outlet pipes, to and from the apparatus, enter the main supply pipe. This difference of pressure is produced by partially closing the gate valve B. A difference of pressure between these two points of about one-half a pound is sufficient. The globe valve N on the inlet pipe should always be kept wide open. All further regulation of the flow of the coagulant should be done by means of the globe valve M on the outlet pipe from apparatus.

To FILL the coagulating apparatus close the globe valves M and N and remove the plug O in the cover of the apparatus. Draw out all solution in the apparatus through the waste pipe P. Put in about nine pounds of ammonia alum (crystal or lump), fill the interstices with the solution taken out of apparatus, and replace plug O. As little coagulant should be used as will do the work properly. One grain of alum to each gallon of water is about right.

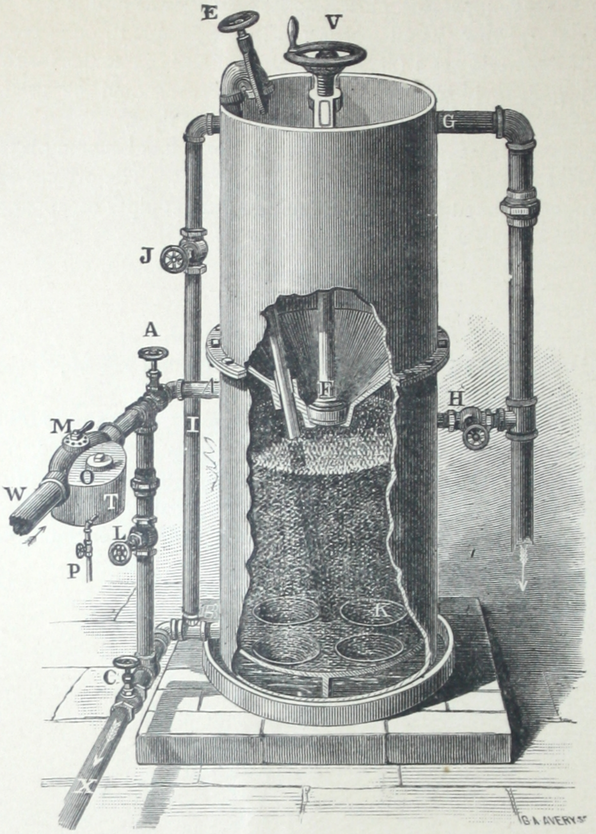
In case the orifices of inlet and outlet pipes of apparatus become obstructed, close the gate valve A and open valves M and N and valve in waste pipe P. The orifices will be freed by means of the strong current thus produced through the inlet and outlet pipes of apparatus.

ANOTHER SPECIAL FORM,

For some localities we make a style, in the large sizes, lower than the others described, having the same amount of filtering material in proportion to capacity. This style, not shown in any cut, has no upper compartment, and the filter bed is washed by a strong current of water, causing violent agitation and attrition, thoroughly cleansing the filtering material or bed.

Where this style can be used it affords some advantages over the others, being simpler and accomplishing the same results, which are guaranteed.

The price is the same for the same capacity.



DISCHARGE FILTER.

Price, $150 F. O. B. Capacity, 4 to 6 gallons per minute ; 6,000 gallons per 24 hours.

This filter is of cast iron, 16 inches in diameter, and 6 feet high. It is the smallest size constructed in accordance with the principal of cleansing the filtering material by discharging it from the filter proper into an upper open tank or compartment filled with water, and then re-washing the filtering material by allowing it to flow back into the filter. It is admirably adapted to hotels, laundries and small industries.

WHEN FILTERING—Admit the water by opening inlet valve A and open outlet valve C. The water passes down through the filtering material and out through the cone valves K and so on through valve C and outlet pipe X, all other valves being closed.

The Filters should be connected with main pipe in such a manner that a by-pass is formed around filter, or in other words it should be so arranged that the filter may be disconnected without disturbing main pipe or the flow of water through it. This may be done by placing valves in both the inlet and outlet pipes from filter to main, and in main pipe between the points where inlet and outlet pipes of filter connect with it.

FRANKLIN INSTITUTE LIBRARY

When Washing—Close the valves A and C and open valve L; remove the clamp and ball valve E on the top of the discharge pipe. The water will then pass through the outlet cone valves K and up through the filter bed, loosening it and producing pressure which causes the filtering material to be discharged from the lower compartment up through the discharge pipe into the tank or upper compartment, which should always be kept filled with water. The filtering material displaces the water which flows out through the upper waste pipe G, carrying with it the silt and impurities that have been retained in the filter bed while filtering. After the filtering material has all been discharged into the tank, close the valve L and open valve H; then open the centre valve F by means of the hand wheel V at the top, and the filtering material will flow back into the lower compartment, displacing the water which flows out through the lower waste pipe H, carrying with it any silt or impurities that may have been carried down with the filtering material, and thus giving the latter a second washing. After the filtering material has all flowed back into the lower compartment close valve H and centre valve F, care being taken that the seat is free from sand; replace the clamp and ball valve E on the top of the discharge pipe and the filter is ready to commence work.

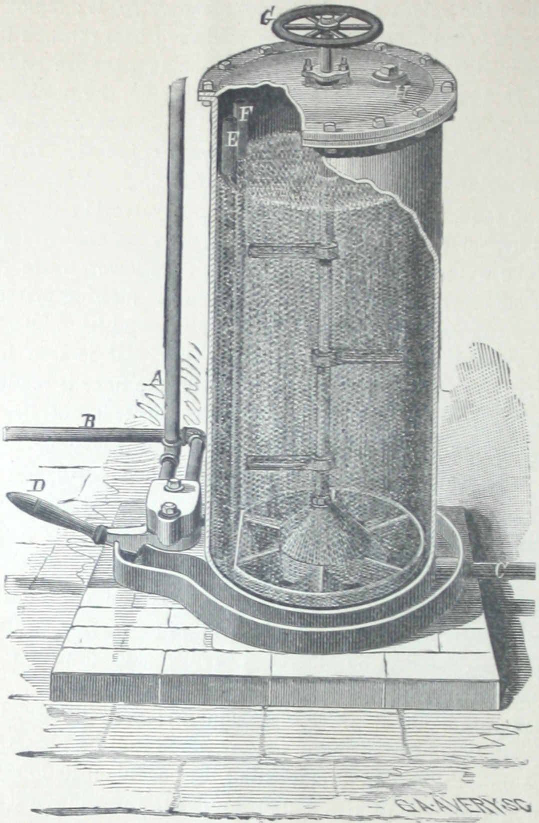
The first filtered water should be used to fill the tank, as it will not be perfectly bright. This is done by keeping valve C closed and opening valve J on pipe I, leading from the outlet pipe to the tank. When the tank has been filled close the last mentioned valve and open valve C. Water from the main supply pipe W will enter the filter through the coagulating apparatus T and inlet pipe A above the filtering material; pass down through the bed and outlet cone valves K, which prevent the sand from escaping while the water passes readily through into the outlet pipe X.

Filling and Operating Coagulating Apparatus.—To fill coagulating apparatus close the valve M in the apparatus by moving lever as far as it will go in the same direction as that traveled by the hands of a watch; then remove the plug O in the top and draw off all the solution in the apparatus through the waste pipe P.

Put in three pounds of ammonia alum (crystal or lump); then fill interstices with water or with the alum solution previously taken from the tank, after which replace plug O. The valve M should be open sufficient to give only the required quantity of the coagulant to do the work properly. When the valve is open from a distance of one hole to one-half a revolution it will give the sufficient quantity in most cases.

To open coagulant valve, turn the lever in a direction opposite to that traveled by the hands of a watch.

The apertures in valve M being small are liable to become obstructed, and require to be cleared frequently. This may be done at the time of filling apparatus, before removing plug O by opening and closing valve M while valve in waste pipe P is open. A strong current will then pass through apertures, freeing the latter from all obstructions. Then close valve M and fill tank as before.



HOUSE FILTER, No. 2.

Price, $100 F. O. B. Capacity, 4 to 6 gallons per minute; 6,000 gallons per 24 hours.

Depth of filtering material, 28 inches; quantity of filtering material, three bushels. This style is specially adapted to household use, being simple, and easily operated by a domestic, or by any person without mechanical knowledge.

Pipe A is the supply or inlet to filter; C clear water outlet from filter, and B the waste pipe which connects with the open sink or drain.

The Filters should be connected with main pipe in such a manner that a by-pass is formed around filter, or in other words it should be so arranged that the filter may be disconnected without disturbing main pipe or the flow of water through it. This may be done by placing valves in both the inlet and outlet pipes from the filter to main, and in main pipe between the points where inlet and outlet pipes of filter connect with it.

WHEN FILTERING, the handle D should be turned to the right as far as it will go, and the water will enter through three-way valve up through pipe F, and then down through the filtering material and out through cone outlets at the bottom, issuing clear, through pipe C. The filter should be washed once a day, and while no water is required for use.

WHEN WASHING place handle D to the left as far as it will go. This will close pipe F and open pipe E, and the water will enter through valve into lower chamber, up through cone outlets and through the filtering material, thereby loosening and carrying with it all the silt and impurities that have been retained in the sand while filtering, and discharging them down through the pipe E and out through one of the openings in three-way valves into waste pipe B. At the same time, to insure a thorough washing, the central shaft, which has attached to it three radial arms, should be turned slowly by means of hand wheel G. About five minutes are required.

The first filtered water should run to waste until clear.

The central shaft, with its agitating arms, is the subject of a separate patent. It can not be turned except while washing, the sand being then in a semi-liquid condition, owing to the upward current of water.

H is opening in head, to be used when filling.

House Filter No. 1 is constructed same as the above; size, 10 inches in diameter, price, $60 F. O. B. Capacity, 1½ gallons per minute.

The coagulating apparatus is attached and operated in the same manner as described on page 43, illustrating Discharge Filter.

SCHEDULE OF SIZES AND PRICES.

Diameter	10 in.	16 in.	16 in.	20 in.	24 in.	40 in.	50 in.	5 ft.	6½ ft.	8 ft.	10 ft.
Height	3 ft.	4 ft.	6 ft.	4 ft.	7 ft.	9 ft. 8 in.	12 ft.	13 ft.	13 ft.	13 ft.	13 ft.
Size of Supply Pipe	½ in.	¾ in.	¾ in.	1 in.	1¼ in.	2 in.	2½ in.	2½ in.	3 in.	4 in.	6 in.
Square feet of Filtering Surface	.49	1.4	1.4	2.18	3.1	8.7	13.6	19.6	33.2	50.3	78.5
Bushels of Filtering Material	.75	3.	3.	5.	13.	43.	68.	98.	166.	250.	390.
Minimum capacity in gallons per minute	1.5	4.	4.	6.5	10.	26.	40.	60.	100.	150.	250.
Capacity per 24 hours	2,000	6,000	6,000	9,000	15,000	40,000	60,000	90,000	150,000	200,000	325,000
Shipping weight of Filter	175 lbs	365 lbs.	550 lbs.	704 lbs.	1000 lbs.	2500 lbs.	3000 lbs.	3500 lbs.	5700 lbs.	8000 lbs.	10000 lbs.
Shipping weight of Filtering Material	90 lbs.	375 lbs.	375 lbs.	469 lbs.	1300 lbs.	4300 lbs.	6800 lbs.	9800 lbs.	16600 lbs.	25000 lbs.	39000 lbs.
Test pressure, per square inch	75 lbs.	75 lbs.	75 lbs.	100 lbs.	75 lbs.	60 lbs.	60 lbs.	60 lbs.	60 lbs.	40 lbs.	40 lbs.
Price, F. O. B.	$60	$100	$150	$225	$400	$650	$850	$1,250	$1,700	$2,300	$3,000

Estimates on larger sizes for city supplies furnished on application.

Filters built to withstand any required pressure, with corresponding additional cost.

Most of the above sizes constantly on hand. One or more of any size can be produced in four to six weeks.

Larger filters, up to thirty feet in diameter, are made to order, the size depending to some extent on the location in which they are to be placed.

It should be borne in mind that all figures showing the capacities of filters are approximate. The rapidity with which water is filtered depends in great measure on its condition. If the water is moderately clear it will flow freely, and the capacity of the filter will be greatest; but if it is very muddy, the filter, having more work to do, will be longer in removing the sediment, and the water will not flow as rapidly. The basis on which the above table of capacities is made is the Croton water as supplied to the City of New York.

A PARTIAL LIST.

The following is a partial list of cities, towns, industries, hotels, manufactories, mills, private citizens, etc., that have adopted the Hyatt Filters and system. The list covers filters and plants of capacities varying from a few thousand gallons per day to many millions of gallons in the same time. It is not a perfect list of all users of our filters, but is only given to show to what a variety of uses and to what a wide extent our filters and system are applicable.

WATER WORKS.

Atlanta, Ga.,	Source of Supply,	Surface Water.
Charleston, W. Va.,	" " "	Elk River.
Belleville, Ill.,	" " "	Richland Creek.
Somerville and Raritan, N. J.,	" " "	Raritan River.
Eau Claire, Wis.,	" " "	Ground and Surface Water.
Rich Hill, Mo.,	" " "	Marias des Cygnes River.
Tunkhannock, Pa.,	" " "	Springs and Surface Water.
Chillicothe, Mo.,	" " "	Grand River.
Beatrice, Neb.,	" " "	Blue River.
Nebraska City, Neb.,	" " "	Missouri River.
Huntington, W. Va.,	" " "	Ohio River.
Raleigh, N. C.,	" " "	Branch of Neuse River.
Bucyrus, Ohio,	" " "	Sandusky River.
Wichita, Kan.,	" " "	Little Arkansas River.
Greenwich, Conn.,	" " "	Impounding Reservoir.

PROMINENT MANUFACTURERS.

Standard Oil Co.	Cleveland, Ohio.
Arctic Ice Machine Co.	" "
Cleveland Rolling Mill (second order),	" "
Union Steel Co.	Chicago, Ill.
North Chicago Rolling Mill	" "
A. H. Andrews & Co., Furniture	" "
Standard Steel Works	Philadelphia, Pa.
I. P. Morris Co., Steam Engines	" "
Boericke & Tafel, Medicines	" "
Charles L. Smith M'f'g Co.	" "
Omaha & Grant Smelting and Refining Co.	Omaha, Neb.
A. L. Strang Co., Railway Supplies, etc.	" "
Calumet & Hecla Mining Co.	Calumet, Mich.
Taylor Manufacturing Co., Agricultural Implements,	Chambersburg, Pa.
Rathbone, Sard & Co., Stoves	Albany, N. Y.
Porter Manufacturing Co. Foundry.	Syracuse, N. Y.
Solway Process Co.	" "
Bradley & Co., Agricultural Implements,	" "
N. Y. Safety Steam Power Co.	New York City.
C. T. Reynolds & Co., Paints and Oils.	New York City.
De La Vergne Refrigerating Co.	" "
Colgate & Co., Fine Soaps	Jersey City, N. J.
Lister Bros., Fertilizers	Newark, N. J.
U. S. Electric Lighting Co.	" "
Celluloid Manufacturing Co.	" "
Thompson-Houston International Electric Co.,	Boston, Mass.
Pennsylvania Lead Co	Pittsburgh, Pa.
Maginnis Oil and Soap Works	New Orleans, La.
S. Hersheim Bros. & Co.	" "
Edison Electric Illuminating Co.	" "
Russia Cement Co.	Gloucester, Mass.
Crane & Breed M'f'g Co., Caskets	Cincinnati, O.
Lovell & Buffinton Tobacco Co	Covington, Ky.
Speers Wadding Co.	Memphis, Tenn.
D. M. Gilmour Furniture Co.	Minneapolis, Minn.
Doran & Smith, Banking and Milling,	Le Sueur, Minn.
Lea Pusey, Wadding and Waste	Wilmington, Del.
R. L. McDonald & Co., Dry Goods	St. Joseph, Mo.
Joliet Steel Co. (second order)	Joliet, Ill.
Shaw Kendall & Co., Steam Fitters	Toledo, O.

Rio Grande Railway Co	Brownsville, Tex.
Western Steel Co., (second order)	St. Louis, Mo.
Kauffmann Milling Co	" "
Rio Chemical Co	" "
West India M'f'g Co	" "
Mound City Paint and Color Co	" "
Crystal Plate Glass Co	" "
Pond Engineering Co	" "
Worcester Steel Co	Worcester, Mass.
Wm. Lumb & Co., Sanitary Supplies	Boston, Mass.

TEXTILE FACTORIES.

Norfolk & N. B. Hosiery Co	New Brunswick, N. J.
Victor Knitting Mills	Cohoes, N. Y.
Newman & Adams	" "
Le Roy & Lamb	" "
John Scott & Sons	" "
Troy Manufacturing Co	" "
Star Knitting Co	" "
Horrocks & Van Benthuysen	" "
W. H. & D. Akin	" "
J. W. Himes	" "
Neil & McDowell	" "
Anchor Hosiery Mills	" "
Henry S. Bogue	" "
Parsons Manufacturing Co	" "
Root Manufacturing Co	" "
Rankin Knitting Co	" "
Root & Waterman	" "
Munson Manufacturing Co	" "
L. & S. Sternberger	Philadelphia, Pa.
Rob Roy Hosiery Co	Troy, N. Y.
Raritan Woolen Mills	Raritan, N. J.
Waterford Knitting Co	Waterford, N. Y.
Ford & Pynes	" "
Clark Thread Company	Newark, N. J.
Penman Manufacturing Co	Paris, Canada.
J. Capps & Son, (Limited)	Jacksonville, Ill.

COLLARS, CUFFS AND SHIRTS.

Earl & Wilson	Troy, N. Y.
James K. Pine	" "
Tim Wallerstein & Co	" "
Mier, Hall & Hartwell	" "
Geo. P. Ide & Co	" "
Casey H. Leeson	St. Louis, Mo.
Simpson & Henderson	Minneapolis, Minn.
Chas. D. Roberts	Springfield, Ill.
Jacob Miller & Son	Philadelphia, Pa.

LAUNDRIES.

W. A. Clark, Jr	Cincinnati, Ohio.
American Steam Laundry	" "
B. D. Barton & Co	" "
Excellent Laundry	" "
M. Spickerman	Cincinnati, Ohio.
White Star Steam Laundry	" "
Jno. E. Schroder	" "
W. F. Mitchell	" "
Home Steam Laundry	" "
William Kuhn	" "
E. J. Cannan	Toledo, Ohio.
Will H. Harbeck	" "
Eugene Duncan	Albany, N. Y.
J. B. Killip	" "
V. Henry Rothschild & Co	New York City.
Mrs. F. Hopkins	Troy, N. Y.
Stone, Blair & Co	" "
J. W. & W. L. Gardner	" "
E. F. Rogers	" "
R. M. Mahon	Steubenville, Ohio.
Oceanic Steam Laundry	Jersey City, N. J.
E. Shepardson	Richmond, Va.
Iron City Laundry	Pittsburgh, Pa.
R. McKeon	Newark, N. J.
Crowley & Marle	" "
Thos. Linnet, Jr. & Co	" "
White & Beck	Atlanta, Ga.
C. A. Royce	Springfield, Mass.
Thomas Clements	Philadelphia, Pa.
Lewis G. Carr	" "
James D. Henry	" "
Charles N. Carr	" "
Thomas E. Houston	" "
Curtis P. Clayton	" "
A. L. Richards	" "
Geo. S. Leachman	Dallas, Texas.
Thomas & Adams	St. Paul, Minn.
J. C. Van Alstyne	Cedar Rapids, Iowa.
Troy Laundering Co	Columbus, Ohio.
William Lawrence	Minneapolis, Minn.
J. R. Purchase	" "
Standard Laundry	" "
Peerless Laundry	St. Louis, Mo.
G. M. Munger & Co	" "
Pacific Laundry	" "
J. K. Bretelle, Missouri Steam Laundry	" "
Wagner Car Co. Laundry	" "
U. S. Marine Laundry	" "
City Laundry	" "
Missouri Steam Laundry	" "
Casey & Leeson	" "
Standard Laundry	" "
Swarts' Laundry	" "
Geo. M. Munger & Co	Kansas City.
Chas. A. Hunt	" "
Troy Laundry	" "
C. J. Hager & Bro	Owensboro, Ky.
Potapsco Laundry	Baltimore, Md.
Waters & Hazlett	Zanesville, Ohio.

A B. Warman	Scranton, Pa.
Memphis Steam Laundry	Memphis, Tenn.

BOTTLERS, ETC.

P. Cuddy	Albany, N. Y.
Hennessey & Nolan	" "
F. A. Haviland	" "
E. Gernon	Cohoes, N. Y.
Bolen & Byrne	New York City.
Cunningham & Co	Philadelphia, Pa.
A. C. Gilligan	Cincinnati, Ohio.
Wm. P. Byrne	New York City.
D. H. Smith	Yonkers, N. Y.
Hon. Wm. Harrigan	Newark, N. J.
McNamee & McHugh	Jersey City, N. J.
J. K. R. Oakley	Newburg, N. Y.
C. Zuber	Steubenville, Ohio.
Byrne Bros	New York City.
Pomy and Segelke	Omaha, Neb.
C. Magnus	Cedar Rapids, Iowa.
Sachs Kirkpatrick & Co	Cleveland, O.
Lippincott Soda Water M'f'g Co	" "
J. J. Flynn	Quincy, Ill.
Andrew Lohr	Cairo, Ill.
Henry Hasenjaeger	" "
Plaut Bros.	Brooklyn, N. Y.
T. L. Neff	" "
E. W. Few	" "
Horn & Eschback	Kansas City, Mo.
L. Lippencott	St. Louis, Mo.
John Love	Kansas City, Mo.
O. B. Kinsey	" "
Knuwener & Verhage	Cincinnati, Ohio.
P. L. Cella & Sons	Pittsburgh, Pa.

PAPER MAKERS.

Martin & Wm. H. Nixon	Philadelphia, Pa.
Diamond Mills Paper Co	Milburn, N. J.
Riverside Mills	Holyoke, Mass.
Massasoit Paper Co	" "
Winona Paper Co	" "
Crane Bros	Westfield, Mass.
Vernon Bros. & Co	" "
Geo. W. Wheelwright, Paper M'f'g Co.	Fitchburg, Mass.
Hudson River Water Power and Paper Co.	Mechanicville, N. Y.
H. F. Watson	Erie, Pa.
Gilbert & Bell	Waterford, N. Y.
Carew Manufacturing Co	South Hadley Falls, Mass.
Z. Crane, Jr. & Bros.	Dalton, Mass.

SUGAR REFINERS.

Decastro & Donner	Brooklyn, N. Y.
Hon. H. C. Warmoth	New Orleans, La.
Louisiana Sugar Refining Co	New Orleans, La.
Duncan F. Kenner	" "
Wm. Henderson	" "
E. F. Rogers	St. Charles Parish, La.
McKean, Borie & Co	Philadelphia, Pa.
Belcher Sugar Refinery	St. Louis, Mo.
F. O. Matthiesson & Weichers	Jersey City, N. J.

PUBLIC INSTITUTIONS.

Capitol Building	Albany, N. Y.
St. Alphonsus Church	New Orleans, La.
St. Joseph's Orphan Asylum	" "
Charity Hospital	" "
Mt. Carmel Asylum	" "
U. S. Custom House	" "
Sisters of Notre Dame	Cincinnati, Ohio.
Pres. Ministers' House	Perth Amboy, N. J.
Kingston Asylum	Kingston, Ont.
Frankford Arsenal	Philadelphia, Pa.
Jacksonville Insane Asylum (2d order),	Jacksonville, Ill.
Franklin Institute	Philadelphia, Pa.
Hamilton Court House	Cincinnati, Ohio.
Merchants' Exchange	St. Louis, Mo.
St. Louis Exposition	" "
Turner Building	" "
New York State Reformatory	Elmira, N. Y.
House of Refuge	Philadelphia, Pa.
Holy Ghost College	Pittsburgh, Pa.
Jacksonville Female Academy	Jacksonville, Ill.
State Penitentiary	Joliet, Ill.

HOTELS, CLUBS, ETC.

Arlington House	Washington, D. C.
Gibson House	Cincinnati, Ohio.
Burnet House	" "
St. Nicholas	" "
Hotel Royal	New Orleans, La.
Boston Club	" "
H. I. Kimball House	Atlanta, Ga.
Indian Harbor Hotel	Greenwich, Conn.
West End Hotel	Long Branch, N. J.
Hotel Anderson	Pittsburgh, Pa.
Hotel Duquesne	" "
Duquesne Club	" "
W. C. Beetchenow	Newark, N. J.
Dunlap House	Jacksonville, Ill.
The Halliday Hotel	Cairo, Ill.
Smedley House	Philadelphia, Pa.
Aldine	" "
Southern Hotel	St. Louis, Mo.
Beers' Hotel	" "
Lincoln Flats	" "
St. Louis Club	" "
Hurst's Hotel	" "
Sprague's Hotel	" "

ICE MANUFACTURERS.

Linde, Smith & Co	Danville, Va
Champion Ice and Cold Storage Co	Covington, Ky.
Transparent Ice Co	Richmond, Va.
Home Ice Co	Evansville, Ind.
Arctic Ice Co	Cincinnati, Ohio.
Smith Transparent Ice Co	W. Washington, D. C.
Gillen & Hagood	Jacksonville, Fla.
Transparent Ice Co	Danville, Va.
Distilled Water Ice Manufacturing Co	Cairo, Ill.
E. W. Bewley	Bowling Green, Ky.
Benitez, Sobrino & Co	Havana, Cuba.
Mecklenberg Ice Co	Charlotte, N. C.
Lake Region Ice and Refrigerating Co	Eustis, Fla.
Kingston Ice Co	Kingston, Jamaica, W. I.
Tampa Ice Co	Tampa, Fla.

BREWERS AND DISTILLERS.

Phœnix Distilling Co	Chicago, Ill.
Louisiana Brewing Co	New Orleans, La.
Southern Brewing Co	New Orleans, La.
Christian Moerlein Brewing Co	Cincinnati, Ohio.
Gerke Brewery	“ “
New England Distilling Co	Covington, Ky.
Chas. Tracey, Rectifying Establishment,	Albany, N. Y.
Western Distilling Co	St. Louis, Mo.
C. D. Torrey	Albany, N. Y.
Keystone Brewing Co	Pittsburgh, Pa.
Somerset Distilling Co	East Millstone, N. J.
E. N. Cook & Co	Buffalo, N. Y.
Houck & Dieter	El Paso, Texas.
W. A. Gains & Co	Frankfort, Ky.
David Gallagher	Philadelphia, Pa.

CONFECTIONERS.

J. H. Empson	Cincinnati, Ohio.
Reinhardt & Newton	“ “

PLUMBERS.

Allan Gilmour	Albany, N. Y.
Ridgeway & Russ	“ “
Hunnicutt & Bellingrath	Atlanta, Ga.
John Borden & Bro	Philadelphia, Pa.
Jas. D. Thompson	“ “
Newton Plumbing Co	Newton, Kan.
Welchaus & McEwan	Omaha, Neb.
Trimble & Lutz	Wheeling, W. Va.
O'Conner & Werst	Louisville, Ky.

MISCELLANEOUS.

Albany Billiard Ball Co	Albany, N. Y.
Bonsilate Co., Limited	“ “
Embossing Co	“ “
W. H. Keeler, Restaurant	“ “
McDonald & Steiry, Photographers	“ “
Townsend Furnace	Albany, N. Y.
G. H. Treadwell, Fur Dealer	“ “
Van Dusen & Co., Box M'f'rs	New York City.
Marx & Rawolle, Glycerine and Varnish	N. Y. City.
L. Lelong & Bro , Gold Smelters	Newark, N. J.
Charles Burroughs, Machinery	“ “
Frank W. Handy, Architect	Cincinnati, Ohio.
Sol. Langdon & Son	“ “
Joseph R. Peebles, Grocer	“ “
Aug. E. Muth, Baker	“ “
W. R. Teasdale, Dyer	“ “
Amos Shinkle	Covington, Ky.
Mellon Bro., Builders' Supplies	Pittsburgh, Pa.
Chapin & Gore, Wholesale Grocers	Kansas City, Mo.
Sprague & Son, Restaurant	St. Louis, Mo.
Slocum Spring Water Co	Tunkhannock, Pa.
L. F. Bassett, City Engineer	Sacramento, Cal.
Elmira Water Works Co	Elmira, N. Y.
George Goodfellow, Carpets	Philadelphia, Pa.
I. C. Seeley, Real Estate	Minneapolis, Minn.
Schmidt Bros., Druggists	Evansville, Ind.

RESIDENCES.

Hon. Daniel Manning	Albany, N. Y.
R. C. Pruyn	“ “
C. L. Pruyn	“ “
Lewis Deitz	“ “
George Hibsch	“ “
C. M. Hyatt	“ “
John Keeler	“ “
Peter Kinnear	“ “
Joe Emmett	“ “
A. C. Graves	“ “
J. H. King	“ “
J. G. Meyers	“ “
E. Ogden, Architect	“ “
J. D. Parson, Jr	“ “
A. H. Sweeny	“ “
G. W. Van Slyke	“ “
Wm. Clark, Treas. Clark Thread Co	Newark, N. J.
P. Sanford Ross	“ “
Frank A. Wilkinson	“ “
Edward Weston	“ “
Thos. T. Kinney	“ “
Wm. A. Righter	“ “
Jno. H. Ballantine	“ “
S. C. Halsey	“ “
Andrew Albright	“ “
Edw. H. Duryee	“ “
Dr. C. S. Stockton	“ “
George Wilkinson	“ “
Hon. Geo. A. Halsey	“ “
Jerome Taylor	“ “
S. S. Battin	“ “
Robert F. Ballantine	“ “
George B. Cluett	Troy, N. Y.
J. W. A. Cluett	“ “
Justus Miller	“ “

A. J. Drexel	Philadelphia,	Pa.
H. N. Rittenhouse	"	"
E. C. Penfield	"	"
J. C. Harris	"	"
W. W. Gibbs	"	"
Francis Daily	"	"
Isaac Rosskam	"	"
H. Gerstley	"	"
C. W. Bergner	"	"
Edwin F. Partridge	"	"
S. Stokley	"	"
George V. Cresson	"	"
E. H. Godshalk	"	"
Alfred C. Harrison	"	"
H. T. Proctor	Cincinnati,	Ohio.
S. W. Skinner	"	"
S. E. Hyndman	"	"
W. R. Allen	St. Louis,	Mo.
Jose F. Navarro	Seabright,	N. J.
H. L. Lovell	Covington,	Ky.
D. C. Collins	"	"
W. H. Glore	"	"
Henry Phipps, Jr	Pittsburgh,	Pa.
Chas. R. Dillworth	"	"
A. M. Byers	"	"
H. Darlington	"	"
Chas. J. Clark	"	"
Wm. Miller	"	"
T. M. Carnagie	"	"
H. C. Frick	"	"
Parke Painter	"	"
David A. Stewart	Pittsburgh,	Pa.
W. P. DeArmett	"	"
Harvey Childs, Jr.	"	"
J. M. Schoonmaker	"	"
Geo. Westinghouse	"	"
B. F. Jones	Allegheny City,	Pa.
Thompson Bell	"	"
H. W. Oliver	"	"
James A. Chambers	"	"
Jacob Painter, Jr	"	"
Louis Neeb	"	"
Chas. R. Long	Louisville,	Ky.
Hon. Edward P. Kerby	Jacksonville,	Ill.
W. E. Capps	"	"
David Prince	"	"
George T. Burroughs	Chicago,	Ill.
John C. Parkes	"	"
John W. Hobb	Wheeling,	W. Va.
Lea Pusey	Wilmington,	Del.
W. C. Squire	Rahway,	N. J.
J. R. Shotwell	"	"
Prof. E. A. Stevens	Hoboken,	N. J.
George Russell	Brooklyn,	N. Y.
J. H. Maginnis	New Orleans,	La.
C. W. Ehman	Pipestone,	Minn.
W. S. Jessup	Hillsborough,	N. C.
J. H. Newton	Holyoke,	Mass.
Charles Balbach	Omaha,	Neb.
C. A. Phinizy	Augusta,	Ga.
Allison S. Green	Atlanta,	Ga.
H. G. Brooks	Dunkirk,	N. Y.